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ENVIRONMENTAL QUALITY

No. 388

CHINA ADDRESSES ENVIRONMENTAL ISSUES -- IV

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CONTENTS

New Environment Minister Gives Views (Li Ximing; HUANJING BAOHU, No 8, 1982) .....	1
Incorporating Environmental Protection Into Economic Planning Emphasized (Zhu Zhongjie; HUANJING BAOHU, Sep 82) .....	8
Supervisory Aspects of Environmental Management Discussed (Qu Geping; HUANJING BAOHU, No 8, 1982) .....	14
Using Economic Means To Strengthen Environmental Management Urged (Qu Geping; HUANJING, No 8, 1982) .....	21
State Council Issues Industrial Pollution Rules (Beijing Domestic Service, 18 Feb 83) .....	24
Contents, Mission of Environmental Geology Discussed (Wang Baojin; CHANGCHUN DIZHI XUEYUAN XUEBAO, No 2, 1982) ....	25
New Look at Land Use, Protection Urged (Mao Wenyong; HUANJING BAOHU, No 7, 1982) .....	32
Water Conservancy Commission Set Up in Jilin (XINHUA Domestic Service, 18 Oct 82) .....	37
Academy of Sciences Lays Groundwork for Major River Plain Development (RENMIN RIBAO, 17 Oct 82) .....	38
Regulations Governing Water, Soil Conservation Published (SHANXI RIBAO, 8 Jul 82) .....	40
Ma Wenrui Addresses Shaanxi Conservation Meeting (Shaanxi Provincial Service, 27 Jan 83) .....	49

Conference on Water and Soil Conservation Selects Key Improvements Sites (RENMIN RIBAO, 24 Aug 82) .....	50
Head of Water Conservancy Department Comments on Conservation 'Regulations' (Gao Jincai Interview; SHANXI RIBAO, 18 Jul 82) .....	52
Soil Erosion in Gansu Serious, Need for Strong Control Measures Seen (Sun Gui, Yang Guoxiong; GANSU RIBAO, 5 Aug 82) .....	55
Managing Small River Basins Well Key to Water, Soil Conservation (GANSU RIBAO, 28 Jul 82) .....	58
Ways To Control Soil Erosion Proposed (Duan Zhonghong; SHANXI RIBAO, 21 Aug 82) .....	59
Way To Improve Water, Soil Conservation, Increase Benefits (SHANXI RIBAO, 16 Jul 82) .....	62
Specialized Households Contract To Control Small River Basins (Wang Wencai, Wang Ziliang; SHANXI RIBAO, 16 Jul 82) .....	64
Wan Li Addresses Tree-Planting Conference (XINHUA Domestic Service, 12 Jan 83) .....	66
Li Ximing Addresses Tree-Planting Meeting (Zhou Yichang; XINHUA Domestic Service, 8 Jan 83) .....	69
'RENMIN RIBAO' on Building New Fuel Forests (RENMIN RIBAO, 13 Nov 82) .....	71
'RENMIN RIBAO' Urges Halt to Forest Destruction (Editorial; RENMIN RIBAO, 28 Oct 82) .....	73
Party, State Issue Directive on Tree Felling (XINHUA Domestic Service, 27 Oct 82) .....	75
Leaders Responsible for Stopping Forest Damage (HEBEI RIBAO, 9 Jan 83) .....	77
Anhui Issues Emergency Circular on Afforestation (Anhui Provincial Service, 22 Jan 83) .....	79
Nei Monggol Issues Decisions on Forest Management (Nei Monggol Regional Service, 9 Jan 83) .....	81
Qinghai Issues Circular on Excessive Lumbering (Qinghai Provincial Service, 8 Jan 83) .....	83
Inspection of Hainan Forests Reveals Serious Damage (Hainan Island Service, 20 Dec 82) .....	84
Forests of Guangdong Suffer Severe Damage; Timber Losses High (NANFANG RIBAO, 9 Nov 82) .....	85

Halting Forest Destruction Urged (NANFANG RIBAO, 31 Oct 82) .....	87
Local Jurisdictions Crack Down on Those Denuding Guangdong Forests (NANFANG RIBAO, 31 Oct 82) .....	89
Yunnan Deals With Cases of Tree-Felling (Yunnan Provincial Service, 10 Jan 83) .....	91
Measures To Protect Forest Resources Urged (YUNNAN RIBAO, 3 Nov 82) .....	92
Marine Environmental Protection Law Readied (XINHUA, 22 Jan 83) .....	95
Reason, Purpose of 'Marine Environmental Protection Law' Explained (GUANGMING RIBAO, 25 Aug 82) .....	96
Survey of Coastal Zones, Tidal Flats Underway (XINHUA, 16 Nov 82) .....	99
Measures To Control Water Pollution Proposed (GUANGMING RIBAO, 9 Nov 82) .....	100
Monitoring of Marine Pollution Needed (NANFANG RIBAO, 17 Nov 82) .....	102
Chinese-American Scientific Collaboration Yields Good Results (RENMIN RIBAO, 3 Aug 82) .....	103
Distribution, Variation of Pollutants in Jiaozhou Bay Studied (SHANDONG HAIYANG XUEYUAN XUEBAO, Dec 82) .....	104
Standards, Research on Pollutants in Feeds Urged (Pan Zhonghua; XUMU YU SHOUYI, 20 Aug 82) .....	108
Safe, Rational Ways To Use Pesticides Explored (Hao Ruyi; HUANJING, No 8, 1982) .....	112
Reason for Ban on Production, Use of BHC Discussed (Zhang Yourong; HUANJING, No 8, 1982) .....	114
Pesticide Pollution Poses Health Threat in Zhanjiang Prefecture (Ning Chuansheng, Peng Yerong; NANFANG RIBAO, 12 Oct 82) .....	116
Destruction of Scenery Requires Establishment of Environmental Management Laws (Luo Dianrong, Deng Jianxu; HUANJING BAOHU, No 8, 1982) .....	118
Reason, Use of Pollution Charges Explained (Gao Yusheng; HUANJING BAOHU, No 7, 1982) .....	122

Beijing's Measure to Further Crack Down on Pollution Offenders (HUANJING BAOHU, No 7, 1982) .....	126
Article Describes Anshan Iron and Steel Company's Success in Pollution Control (HUANJING BAOHU, Sep 82) .....	133
Industry Urged To Emulate Anshan Steel Works Environmental Protection Work (HUANJING BAOHU, Sep 82) .....	141
Striking a Balance Between Increased Production and Environmental Protection (SICHUAN RIBAO, 19 Nov 82) .....	143
Reducing Urban Pollution With Increased Use of Honeycomb Bricquettes (SHANXI RIBAO, 19 Nov 82) .....	145
Investment in Shanxi Environmental Clean-Up Paying Off (Wang Xingnan, Chang Xueqing; SHANXI RIBAO, 17 Nov 82) .....	149
Strict Precautions Against Industrial Pollution of Countryside (Zhang Jiehyi; WEISHENG KEPU BAO, 10 Jul 82) .....	151
Shaoxing Notes Early Results in Industrial Waste Pollution Control (Gao Yen; ZHEJIANG RIBAO, 28 Jul 82) .....	153
Yunnan Pushes Afforestation Work in Rainy Season (YUNNAN RIBAO, 6 Aug 82) .....	156
Yunnan Makes Progress in Afforestation (Cheng Yongzhao, Shi Wanfeng; YUNNAN RIBAO, 6 Aug 82) .....	158
Systems of Responsibility in Forestry Work Urged (RENMIN RIBAO, 12 Oct 82) .....	160
Contract Systems Used in Liaoning Forestry (Lin Xuan; RENMIN RIBAO, 12 Oct 82) .....	162
Zhejiang Emphasizes Forestry Work This Winter, Next Spring (ZHEJIANG RIBAO, 21 Sep 82) .....	164
Nation To Enforce Marine Environment Protection Law (XINHUA Domestic Service, 23 Jan 83) .....	166
Beijing Steps Up Treatment, Control of 'Three Wastes' (Chen Enjia; JIANKANG BAO, 19 Aug 82) .....	167
Gansu Takes Steps To Reduce Pollution From Electroplanting (GANSU RIBAO, 13 Oct 82) .....	168
Dangers of Acid Rain Described (Wang Ziqiang; RENMIN RIBAO, 11 Jan 83) .....	169

Atmospheric Pollution Study at Xigu, Lanzhou (Tian Bingshen; GANSU RIBAO, 17 Sep 82) .....	172
Threat of Pollution by Electromagnetic Waves Discussed (Wu Dawei; HUANJING, No 8, 1982) .....	173
Favorable Achievements Made in Controlling Noise Pollution (JIEFANG RIBAO, 24 Jun 82) .....	176
Chemical Poisons Discovered Under Mudanjiang (Zhou Jing; HEILONGJIANG RIBAO, 1 Aug 82) .....	178
First PRC-U.S. Energy, Environment Confab Opens (XINHUA, 8 Nov 82) .....	180
Bai Dongcai Calls on Symposium Participants (Jiangxi Provincial Service, 17 Nov 82) .....	181
Briefs	
Hubei Environmental Protection Forum	182
Shaanxi Tackles Industrial Pollution	182

## NEW ENVIRONMENT MINISTER GIVES VIEWS

Beijing HUANJING BAOHU [ENVIRONMENTAL PROTECTION] in Chinese No 8 1982 pp 2-5

[Article by Li Ximing [2621 6932 6900], minister of urban and rural construction and environmental protection: "Deepen Understanding, Promote Environmental Protection Work\*"]

\* This article is a speech given by Comrade Li Ximing [2621 6932 6900] on 22 July 1982, at the national forum of the chiefs of environmental protection bureaus. The author has revised it for publication by this magazine.

[Text] I. The Strategic Position of Environmental Protection in National Economic Development

The protection and improvement of the environment are important issues that affect economic and social development, they are important components to building the socialist material and spiritual civilization. The main purpose of our efforts to carry out production and construction is to satisfy the increasing basic needs of the people's material and cultural life. The natural environment is not only the place for mankind to absorb basic living matter, it is also the base that provides mankind with raw materials for production and construction. The purpose of protecting the environment is: first, to maintain a good living and working environment for mankind; second, to protect material resources needed by mankind. In our nation's socialist construction, irrational utilization of natural resources and uncontrolled release of the "three wastes" have caused environmental pollution and destruction to worsen. The main reason is that we have separated production and construction and environmental protection, we only consider present production needs. We do not consider the environmental impact created by the massive consumption of resources. We neglect the relationship between resources and the environment, we lack the overall view of developing the national economy. As everyone says, we sacrifice the environment in exchange for development in production. Even though construction has developed greatly and we have sought benefits for the people, we have polluted the environment and destroyed the ecological balance. In the long-term view, we have damaged the basic conditions for economic development and human existence. Therefore, we must have a productive viewpoint, and an ecological viewpoint, we must start out from the unified view of economic benefits and environmental results, and seek coordinated development in economic construction and environmental protection.



Everybody knows that the Huang He Valley is the cradle of the Chinese nation. For several thousand years, our ancestors propagated here and propoled the development of history forward. But because of a long period of productive activities and continued wars, the forests and vegetation of the middle and upper reaches were destroyed, the natural conditions were changed, creating climatic changes. This great artery of more than 5,000 kilometers running through the heartland of our motherland became a muddied and a disastrous "Yellow River." This is the "worry" left us by our ancestors. Today, during this period of construction of unprecedented scale to build the socialist motherland, we must keep this lesson of history firmly in mind, and regard environmental protection and the improvement of nature as important strategic goals in social and economic development. This is needed to sustain the development of the economy and will benefit future generations. We must never leave future generations a second and a third "Yellow River."

At present, the world's nations have all taken the mutual dependence and mutual influence among environment, resources, population and development as the basis for studying the strategic problems of development. The rapid growth of the population and the economy has increased the consumption and depletion of resources and has led to environmental pollution and destruction. The destruction of the natural ecological balance and the population pressure have also caused the destruction of the agricultural environment. The irrational development and distribution of industries have caused the population to rush to the cities causing the deterioration of the urban environment. Practice has forced people to realize that to sustain economic development, we must coordinate it with the environment and we must consider the environment as a whole and we must take this as the starting point to guide programs and plans for economic development. China is a socialist nation, we implement planned economy, and should view environmental protection as a strategic goal in economic development and place it in an important position.

At present, the nation is establishing mid-term and long-term plans for the national economy. We have already considered the strategic position of environmental protection, we have included environmental protection and improvement as one of the guiding principles in the establishment of national economic plans, and have included them in the 10 major tasks of national economic development. We believe, as people's understanding improves, environmental protection will become an active factor in promoting economic growth in modern construction and will play a greater role.

## II. The Environmental Protection Task We Are Facing Is Very Heavy

According to the plan approved by the Central Committee to organize construction, the Urban and Rural Construction and Environmental Protection Ministry is a functional department of the State Council and is in charge of construction in urban and rural areas, environmental protection, the construction industry and mapping work. The main task is to organize and guide the planning and construction of cities and villages throughout the nation according to related principles and policies of the party Central Committee and the State Council and the nation's economic and social development plans, to prevent environmental pollution and destruction, to meet the needs in the construction of socialist modernization, and to create good working and living environments for the people in the cities and villages.

After establishing the new ministry, the first task is to establish the scope of duties. In environmental protection, the scope of work, which is the scope of business, is very broad. First, we must manage environmental pollution created by industrial and agricultural production, and daily living. For example, the "three wastes," noise, vibration and radioactivity released by industries, transportation and productive activities; and destruction of the agricultural ecology caused by the irrational use of pesticides and chemical fertilizers in agricultural production. Second, we must manage environmental destruction caused by construction and development, such as the environmental pollution caused by the building of large water conservancy projects, mines, railroads, highway trunk lines, harbors, wharfs, airports and large industrial projects. Third, we must manage the pollution of oceans caused by economic activity, and we must especially prevent the destruction of the marine environment due to the exploitation of petroleum in the ocean. Fourth, we must manage our nation's natural environment and prevent the destruction of the ecology. We must especially manage rare animals and life forms, prevent the major destruction of natural ecological systems caused by activities to develop forests, land and rivers.

China's environmental protection grew out of nothing. We have done a lot of work and have realized great achievements during nearly 10 years of hard work. The effort has had a positive influence on preventing and controlling the pollution of our environment and the destruction of the natural ecology. But, because the work started late, the foundation was weak, and was limited by the nation's financial and material resources, many problems accumulated. The general trend shows that our nation's environmental pollution and ecological destruction at present not only has not been effectively controlled, but are developing, and have become an outstanding problem affecting economic development and social stability.

In the depth and scope of the work, a lot of environmental protection work has not truly begun. For example, the management of environmental pollution created by industrial and agricultural production and living is a large area. The nation has 400,000 industrial enterprises and 1.3 million commune and brigade enterprises. Most of them are technologically backward, equipment is old and out-dated, the administrative and management level is low, resources and energy are squandered, large amounts of the "three wastes" are released with improper arrangements; pollution and destruction of the environment are very serious. Therefore, preventing and controlling industrial pollution are important tasks in environmental protection work. Some years ago, we devoted a lot of energy to this, but there is more work to be done. In agriculture, the massive application of organic chlorine and other agricultural chemicals that are low in efficiency and leave highly toxic residues, and the irrational application of chemical fertilizers and irrigation using sewage water have destroyed the agricultural environment and the agricultural ecological system. They have only now been noted by people. Environmental management of development and construction activities is an arduous and heavy task, it is not easy to control them. Although the state has established regulations concerning the "three simultaneous efforts," there are still many new projects and developmental activities that we do not know about in advance. We are informed only after they have been included

in the plans, after they begin construction, or even after they have already begun production and have caused pollution. Now, only 66 percent of the nation's large and medium capital construction projects are implementing the "three simultaneous efforts." Of course, to realize these efforts is not easy. Small projects, neighborhood projects and projects undertaken by commune and brigade enterprises are basically not regulated, except for individual regions. Also, there is the environmental protection of the ocean. In particular, some time ago, bidding began for the exploitation of petroleum in the ocean, several dozen foreign companies have submitted bids. The problem of preventing pollution of the ocean created by the exploitation of petroleum is now before us and it has become a new task. China's coastline is 18,000 kilometers long. Pollution of the ocean not only comes from our nation, it also comes from neighboring nations or international activities. Therefore, the management of the marine environment is very complex and especially important work. Besides strengthening management by the state, we must mainly rely on the locality to carry out management. In this work, we still do not have a foundation and it is a very weak link. The duties and responsibilities are far greater than those in managing our nation's natural environment and in preventing the destruction of the ecology. Up to now, they have not been effectively grasped.

The above situation shows that environmental protection work is arduous, and involves every economic sector, industry, transportation, agriculture, commerce and urban and rural construction and people's lives. Their comprehensive and regional nature are both very strong. Therefore, exerting efforts to do environmental protection work well so that they will match our nation's economic construction is a glorious and difficult task the party and state has handed down to us.

### III. We Must Strengthen the Construction of the Environmental Protection Agencies

During the reform of the national agencies, the Central Committee and the State Council decided to establish the Urban and Rural Construction and Environmental Protection Ministry only after careful consideration. This shows the emphasis the party and state have placed on environmental protection work. We should correctly understand the important meaning of this reform. After founding the new ministry, some comrades note that the ministry has only established one environmental protection bureau, and they have been concerned that environmental protection work would be streamlined. I believe the situation warrants an explanation. First, the Urban and Rural Construction and Environmental Protection Ministry is a functional government department in charge of environmental protection. We will surely emphasize the development of this work and carry out our duties. Second, the relationship between urban and rural construction and environmental protection is very close. To construct cities and villages well, we must take environmental protection as the guiding principle in construction based on the characteristics of the natural environment and natural resources. To protect the environment well, we must also include environmental protection in the general plan of urban and rural construction and begin by establishing principles for their development, distribution of industries, residential housing construction, municipal public facilities and urban beautification and greening. In this way, we can make overall plans, treat the symptoms and the disease, take everything into consideration, fundamentally solve the problem of environmental

pollution in cities and villages, and improve the environmental quality of cities and villages. Third, in the personnel system, the Environmental Protection Bureau is the bureau with the most number of workers and the most number of departments in our ministry. At the same time, plans, programs, science and technology, education, external exchange, policy research, materials and facilities for environmental protection are all important tasks of a comprehensive bureau. Later, the work will be gradually divided. Fourth, the ministry mainly concentrates efforts in the investigation and study of macrocosmic problems, considers problems comprehensively from the policy viewpoint and from the overall viewpoint to promote a coordinated development of urban and rural construction, environmental protection, building, surveying and mapping. The massive and concrete environmental management tasks are concentrated in the localities and their accomplishment relies on the local environmental protection departments. Therefore, the future establishment of environmental protection agencies at each local level should be based on this characteristic.

The reform of government agencies at each level mainly is to solve the redundancy of agencies, to streamline the multitude of agencies, personnel and bureaucratism. To strengthen the functional buildup of the government in the future, we must gradually overcome and change the lack of separation of administration and business in which "the government manages production and the enterprises manage society." The environmental protection departments at each level, as government agencies, are becoming more and more important departments of the government, and should be strengthened, not weakened. According to the stipulations of our nation's environmental protection law, I believe it is necessary to retain the organizational system of the environmental protection bureaus of the province, the city and the autonomous region. This is because environmental protection departments, as functional agencies of the local governments at each level, perform the major duty of supervising, inspecting, organizing and coordinating environmental protection work. If the standard of the organizational system is low, it is difficult to carry out duties. Cities with a concentration of industries have already established appropriate environmental protection bureaus, this is also necessary. With the rapid development of small enterprises and commune and brigade enterprises at the county level, regional pollution and destruction of the agricultural ecology in rural areas is becoming worse. The task of environmental protection is heavy. Therefore, the environmental protection agencies of cities and basic level counties should also be established and strengthened in the reform of agencies.

The environmental protection agencies of the management departments of industry, transportation, agriculture and forestry at each level also need to be strengthened. According to the spirit of the "decision to strengthen environmental protection work during this period of national economic readjustment" promulgated by the State Council and the government work report delivered by Premier Zhao Ziyang to the fourth meeting of the Fifth National People's Congress, the way to solve our environmental problems is through self-reliance, comprehensive utilization of resources and energy, the treatment of pollutants, and to combine environmental protection with industrial and agricultural production to achieve both environmental results and economic benefits. According to the principle of "whoever pollutes treats pollution" established by our nation's environmental protection law, each managerial department in production should shoulder the task of

preventing and controlling pollution caused by its own system. Therefore, the managerial departments of production in all enterprises, especially those that cause serious pollution, such as the chemical industry, metallurgy, petroleum, electric power, light industry, textiles, coal, transportation, weapons, nuclear industry, must strengthen leadership in environmental protection work, establish and make sound appropriate environmental protection agencies, organize and begin the work of preventing and controlling pollution caused by their own system, effectively promote the coordinated development of economic construction and environmental protection.

#### IV. Several Tasks That Must Be Emphasized Now

At present, the general guiding ideology in environmental protection work is to continue to implement the "decision to strengthen environmental protection work during this period of national economic readjustment" promulgated by the State Council and the important directive by Premier Zhao Ziyang concerning environmental protection work at the Anshan Steel Works. We must also pay attention to and concentrate on the following tasks.

First, we must strengthen propaganda and education work, continue to improve the understanding of the cadres at each level and the broad masses concerning environmental protection. The propaganda is intended mainly for leading cadres at each level. The Environmental Protection Bureau of Zhejiang Province with the support of the provincial committee propaganda department offered environmental protection classes at the party school, and explained the position and function of environmental protection in economic construction, and the relationship between environmental protection, and economic construction and development to leading cadres from all fronts. This is very good experience. In the future, such knowledge not only should be taught by the party school, we should also include environmental protection courses in short term training classes that teach various types of economic management. We must also educate the broad masses by relying on schools, teachers, youth vanguard teams, and the Chinese Communist Youth Corp, compile and publish popular science materials on environmental protection, and make full use of movies, television and exhibitions to carry out visual education. We can consider establishing volunteer propaganda personnel in middle and elementary schools. Everyone should take action to educate the young people from the time they are young to love and protect flowers, grass, birds and trees, protect the environment and build spiritual civilization well.

Second, we must actively link up presently available channels for environmental protection funds. At present, China has financial difficulties. For a long time, the nation will not be able to appropriate massive amounts of funds to treat pollution. The effort mainly depends on each locality, each department and each enterprise to uphold the principle of self-reliance to solve pollution problems themselves. One way is to facilitate the channels of funds for comprehensive utilization and to retain profits according to the "notice on the method to develop comprehensive utilization of the percentage of profits retained from revenue of products and the treatment of pollution by the 'three wastes' of

industrial and mining enterprises" promulgated by the environmental protection leading group of the State Council and the Ministry of Finance. The second way is to acquire funds according to the stipulations issued by the Central Committee concerning funds for renovation and improvement "to appropriate 20 percent of the fund specifically for old enterprises to treat the 'three wastes.'" The third way is to conscientiously implement the "provisional measure to levy pollution charges" promulgated by the State Council, and to collect, manage and use pollution charges well. The fourth is to include funds for environmental protection in the investment in "three simultaneous" projects in capital construction, engineering projects for technical improvement and for the prevention and control of pollution, and in capital construction and technical improvement plans. This task must be done well.

Third, we must establish monitoring stations and scientific research agencies well. At present, the monitoring stations in 64 key cities throughout the nation have formed a definite working ability, but they lack a technical backbone force, their equipment is out-of-date, and do not suit the needs of work. Each locality must obtain the support of the local government and concerned departments, hasten the establishment of monitoring stations, improve operational capabilities, improve equipment and conditions, and strive to build major monitoring stations within 3 to 5 years. Scientific research work in the province, city and autonomous region must be continually strengthened.

Fourth, we must strengthen the buildup of ideology and operation of environmental protection departments. Environmental protection departments now have few people from their own system, most cadres come from other fronts. Therefore, we must greatly strengthen political and ideological work, fully develop everyone's enthusiasm, establish the ideology of serving the people wholeheartedly and being responsible to future generations. We must strengthen operational training of cadres and provide on-the-job training. Bringing into full play the spirit of initiative is an important aspect to do environmental protection work well. Environmental protection work is in its beginning stage, it has not yet formed a sound working system, and it does not have a complete set of rules and regulations and a perfect operational management method. It has not yet fully established links with all other sectors. Therefore, we must take the initiative to develop work, to organize and coordinate the work well, propagandize related principles, policies and directives of the Central Committee, propagandize the environmental protection law and the "decision to strengthen environmental protection work during this period of national economic readjustment" promulgated by the State Council, and actively propose suggestions. Environmental protection is a comprehensive task. We must rely on the leadership of the party and government, on the party's related principles, policies, and laws and regulations to mobilize each sector, each profession and each enterprise to do the work well. We must devote a lot of time and energy to organization and coordination. As long as leadership makes contact, establishes normal links with every department, all systems will become more sound and all channels will be better linked. Our environmental protection department must also build itself up well, in this way, we can open up a new working situation.

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INCORPORATING ENVIRONMENTAL PROTECTION INTO ECONOMIC PLANNING EMPHASIZED

Beijing HUANJING BAOHU [ENVIRONMENTAL PROTECTION] in Chinese No 9, Sep 82  
pp 5-7, 17

[Article by Zhu Zhongjie [2612 6988 2638]: "Several Views on Drawing Up Environmental Protection Plans"]

[Text] Editor's note: How to better include environmental protection in national economic development plans is important in a socialist nation that practices planned economy. Our experience in this regard is lacking. Everyone has a different opinion. This magazine has published two articles on this problem in this issue and the No 8 issue of 1981. To summarize experiences and elevate understanding of this problem, and stimulate corresponding development of environmental protection in our nation's economic construction, we plan to publish more articles on this. We welcome comrades with experience in this field to submit articles.

Our nation's economic and social development plans are drawn up according to planned and proportional socialist economic laws. Environmental protection is an important component of the national economy, and should account for a definite proportion in development. Whether the proportion is appropriate not only affects environmental quality and people's life, it also affects whether the economy can continue to grow and develop soundly. In past planning work, it was customary to talk about economic development alone and environmental problems were neglected or seldom considered.

This trend should be corrected. We must conscientiously handle environmental problems, solve environmental problems in economic development, and strengthen planned guidance of environmental protection.

How can we say that environmental protection has been included in the national economic plans? What criteria can we use to measure it?

Our preliminary study shows that we can consider using the following aspects to measure it:

(1) In national economic planning work, we can apply the ecological viewpoint to study social and economic development. Economic growth must conform to economic laws and natural ecological laws.

(2) In national economic planning, we must have developmental goals for the environment. Because of the characteristics of the environment, a short term plan will not work. We must have environmental goals for the next 3 years and 5 years, and we should also consider strategic goals for the next 20 years, 50 years and even longer.

(3) In the comprehensive balance of the national economy, we must view environmental protection and production and construction as a major balance.

(4) We must include the goals and demands of environmental protection in the plans of each region and each department, and uniformly arrange them. To control industrial pollution, we must pay attention to eliminating or reducing pollution through technical improvement, and improve the rate of comprehensive utilization of various types of resources and energy.

(5) The goals of environmental protection plans must be converted to evaluation goals and assigned to the enterprises and business units.

Our nation's environmental protection planning work began in the 1970's on the basis of plans to treat the "three wastes." At the time, we also emphasized the drawing up of environmental protection plans, but the requirements and the contents were not concrete enough. In 1975, the former environmental protection leading group of the State Council made specific arrangements for drawing up long-range environmental protection plans. Many provinces, autonomous regions and many cities began drawing up the fundamental work for environmental planning and have acquired a lot of experience. But because of a lack of working methods and systems, the work did not follow a routine.

In March 1981, the State Planning Commission included the suggestions of the environmental protection departments in its notice concerning the drawing up of the "sixth 5-year" economic and social development plan and the "seventh 5-year" plan and ideas about a 10-year plan. The notice was the first to add the content and concrete demands for an "environmental protection plan." It clearly handed down the task of drawing up environmental protection plans to each department. From then on, environmental protection began as an important component of the national economic development plan. This is a welcomed step.

In November 1981, during the National Planning Conference, the State Planning Commission and the former environmental protection leading group of the State Council decided to add an "environmental protection plan" in the 1982 annual plan for national economic development, and they notified the planning committees in each province, city and autonomous region. In this way, environmental protection progressed from being planning goals to concrete annual plans. With the joint efforts of every province, city and autonomous region and departments, the 1982 environmental protection plans were submitted to the higher authorities. This brought us one step closer to including environmental protection in national planning.



In January 1982, the State Planning Commission issued the "1982 Environmental Protection Plan" and its goals to every province, city and autonomous region. The "explanation" of this document pointed out: "For several years, through the control of key polluting sources, the comprehensive utilization of the "three wastes", the strengthening of environmental management, and the levy of pollution charges, environmental quality in some regions has definitely improved. But in the overall view, environmental pollution continues to grow and the environmental quality of some regions continues to worsen." "The problem of environmental protection should attract the attention of all sectors." While issuing the goals and requirements of the plan, it also proposed the tasks and measures of environmental protection. It pointed out: "The key points of near-term environmental protection work are mainly to gradually solve serious pollution by some enterprises and business units in residential areas, protected regions of water sources, and scenic and tourist areas. We must first protect the environment of the capital city of Beijing, and the three scenic and tourist cities of Hangzhou, Suzhou and Guilin well. Every province, city and autonomous region must also concentrate on the environmental protection work of one or two cities." It asked each region and each department "to pool the wisdom and efforts of everyone and to think of ways to enable environmental protection work to progress quickly."

According to the drafts of environmental protection plans submitted to the State Planning Commission by each province, city and autonomous region, the 1982 national goals were formulated as follows: to treat 13 percent of industrial waste water, to treat 17 percent of harmful gases, to retrieve 3.9 million tons/year of industrial dust, to comprehensively utilize 26 percent of industrial waste residue. The above goals have been included in the national plan and should be taken seriously and conscientiously implemented. The environmental management departments of concerned regions should take into consideration the actual situation of the locality, supervise, inspect and organize implementation.

Our nation is a socialist nation based on a planned economy. To protect the environment well, we must first emphasize environmental protection planning. It is an important means to realize the goals of environmental plans, and must be stressed.

## II

Taking the possibility and the need into consideration, what main subjects should environmental protection plans include?

Because people do not have a consistent understanding of the nature of environmental protection work, therefore the content of environmental protection plans are not completely the same. In view of the work of these few years, I believe we can understand environmental protection plans in this way: Environmental protection plans are plans to stimulate economic development and they are also social development plans that raise people's material, cultural and living standards. They unavoidably must involve every sector and every realm of the national economy. Environmental protection plans are comprehensive plans. Comprehensive departments must pay more attention to the requirements for environmental protection. Otherwise, if it is neglected and mistakes are made, the effects and the loss caused will be great.

According to the present management level, it is not possible to demand too much of the environmental protection plans. We must be realistic and keep in mind our own capabilities. Now, plans that each region and each department have begun to draw up include the following subjects:

(1) Plans to control industrial pollution

Plans to control industrial pollution include plans to control the amount of industrial pollutants released and plans for projects to treat industrial pollution.

The goals of the plans to control the amount of industrial pollution released now being implemented are the following:

1. The amount of industrial waste water released (unit: 10,000 tons/year)
2. Percentage of waste water processing stations (%)
3. Total amount of waste gas released into the air (10,000 standard cubic/year)
4. Percentage of waste gas treatment (%)
5. Amount of industrial dust released (tons/year)
6. Percentage of industrial dust recovered (%)
7. Amount of industrial waste residue produced (10,000 tons/year)
8. Percentage of comprehensive utilization of industrial waste residue (%)

To better control environmental pollution, some comrades suggested adding several more planned goals, such as: the amounts of some pollutants converted to amounts of pure substances released (tons/year), percentage of comprehensive utilization of pollutants; percentage of utilization of surplus heat; percentage of utilization of combustible gases; percentage of use of recycled water in industry, etc. These goals can be established first in cities or regions with favorable conditions as experiments to explore the feasibility and scientific nature in practice and then be gradually included in the plans.

Projects to treat industrial pollution are plans to establish measures to realize environmental protection goals of each department and each region. The sources of funds can be divided into the following: investment for capital construction within the national budget; capital for renovation and improvement of fixed assets, retained percentage of profits from products of comprehensive utilization and subsidies from anti-pollution fees returned to the enterprises, loans.

(2) Plans to protect the natural environment

Protection and management of the natural environment is extensive and involves many departments. According to the scope of operation of present environmental

protection departments, we must first manage some natural environments that have special value. Under present conditions, they refer to rare and precious animal and plant species and their ecological environment and geological phenomena of the remnant natural historical refuge; plans for the discovery, restoration and maintenance of topography and scenes, of course these also include capital construction plans for state approved nature protection zones.

### (3) Plans to develop environmental protection enterprises

The present environmental protection enterprise units generally include agencies involved in environmental monitoring, environmental scientific research, environmental education and publication and propaganda. Plans to develop these aspects should include capital construction, training of people and instruments and equipment.

Environmental protection plans, according to their duration, should be linked with national economic development plans. They can be divided into long-range plans (over 10 years), medium-term plans (5 years), and annual plans. Based on the principle of centralized planning and split level management, each local government and administrative department can appropriately supplement and add some goals and concrete demands for environmental protection according to the actual situation at each locality as regional and departmental plans and assign them to the basic levels.

The state environmental protection departments must propose long-range strategic goals for environmental protection within a definite period, and should propose concrete requirements of the goals related to the environment to the departments of the national economy, include such requirements in state plans, and strengthen guidance in these aspects.

What procedures and methods should be used to draw up environmental protection plans?

Because environmental protection work has regional characteristics, environmental protection plans generally should be compiled by "combining the lines and blocks but taking the blocks as the key links."

Here, we will present the method followed by Anhui Province in drawing up its 1982 environmental protection plan: The provincial planning committee, economic affairs committee, environmental protection bureau jointly issued a document to plan and draw up environmental protection plans for its region. The plans were drawn up in order from the lower level to the higher level. They required: "All enterprise units that pollute the environment must draw up plans to prevent and control pollution, and annual plans to treat pollution must be implemented. Environmental pollution problems must be solved by combining efforts with technical improvement and equipment renovation." The method and steps to combine the plans were as follows: The supervisory departments of industry, transportation and commerce in each prefecture and city combined the plans of their own system (including enterprises subordinate to the province). Their environmental protection plans are then submitted to the local planning commission, the economic commission, the environmental protection bureau and the supervisory departments and bureaus directly under provincial jurisdiction. The environmental

protection bureaus of each prefecture and city summarize the local environmental protection plans and submit them to the planning commission and economic commission of the prefecture and the provincial environmental protection bureau. The departments and bureaus directly under the jurisdiction of the province summarize the environmental protection plans of their own departments and submit them to the provincial planning commission, the provincial economic commission, the provincial environmental protection bureau. Then the provincial level environmental protection plan is summarized and included in the national economic and social development plan for the province and submitted to the State Planning Commission, and a copy is sent to the national environmental protection department.

The benefits of this method are as follows: It can fully develop the function of each line and each block, truly realize a "combination of the lines and blocks." It is not like the past method of letting the environmental protection departments "do everything". It pools the wisdom and the efforts of everyone, hands down the requirements and goals of environmental protection to every profession, every business, every basic level so that the goals of environmental protection plans can be established on a solid and reliable foundation and on the foundation of the mass line.

### III

To carry out environmental protection planning well, we must promote basic work. The drawing up of environmental protection plans is the same as drawing up other types of plans. They are inseparable from basic statistical figures and major percentages. Statistical data on the environmental cannot be separated from environmental monitoring, social surveys, and typical survey data. If the basic figures are incorrect, the situation cannot be correctly reflected in the plans.

Our nation's environmental statistics have not been established long, basic work is relatively weak, we lack reliable and accurate scientific data as reference for the goals of the plans. Therefore, planners of environmental protection must closely cooperate with environmental statisticians, care about and support the smooth development of environmental statistical work to establish a solid foundation for drawing up environmental protection plans. They must be skilled at using and analyzing statistical figures, judging the accuracy of the figures when using them, and making the statistical data for the plans as reliable as possible. The basic data (especially the basic figures) for environmental protection plans must strictly use statistical figures and should pay attention to comparability. One must not establish another set of figures or use and revise statistical figures at will. One must pay attention to protect the unity and integrity of the plans and statistics.

Because of the characteristics of environmental protection itself, we must adopt versatile and varied methods, use many channels, fully develop and utilize presently available forces and favorable conditions of specialized departments in order to do the work of environmental protection planning and statistical work well. In particular, we must mobilize and organize the forces and conditions within the environmental protection system to do the basic work in drawing up the plans well. The systems and regulations for planning, statistics, monitoring and standards must be uniform to avoid conflicts.

9296

CSO: 5000/4108

SUPERVISORY ASPECTS OF ENVIRONMENTAL MANAGEMENT DISCUSSED

Beijing HUANJING BAOHU [ENVIRONMENTAL PROTECTION] in Chinese No 8, 1982  
pp 6-8, 11

[Article by Qu Geping [2575 2706 1627]: "Strengthen Supervision of Environmental Management\*"]

\* This article is part of a speech given by the author at the national forum of the chiefs of environmental protection bureaus on 17 June. The author has revised it for publication in this magazine.

[Text]

I

At present, the reality faced by our nation's environmental protection work is: First, environmental pollution and destruction are serious and are becoming worse. They not only create a great loss for society, affect the smooth development of industrial and agricultural production, they also interfere and damage the life and health of the people. Every sector has strongly complained, this situation must be controlled and improved, and must not be allowed to develop further. Second, our nation is a developing nation with a huge population. All trades are waiting to be developed. But the nation's finances are limited, and within a short period, we cannot do as certain developed nations have done, provide a lot of money to treat pollution and improve the environment. Faced with this reality, what ways are there for our nation to protect and improve the environment? The way is to strengthen environmental management to realize the goal of protecting and improving the environment through policy, planning, regulations, supervision, organization and coordination. This is practical, feasible and effective. This should be the guiding principle of our work, we should shift our attention and work towards these aspects.

Environmental management is a comprehensive management including many functions, relying on only one method will not work. But, at present, I want to especially emphasize the function of supervision. Because, first, this function has not been emphasized, and problems of not daring to supervise and being unskilled at supervising are common. At the same time, the means of supervision are backward, the system is not sound and the role of supervision has not been effective. Second, the development of other functions of environmental management, such as policy, planning and coordination, etc., also need to be promoted and guaranteed by supervision, otherwise, they will become mere formalities. Therefore, strengthening supervision becomes an important link in strengthening environmental management work.

## II

The supervisory role is a fundamental function of government agencies. In our nation's environmental protection law, the supervisory function of environmental management agencies at every level of the nation has been clearly defined, and they have been given a lot of authority. In the "decision to strengthen environmental protection work during the period of national economic readjustment" promulgated by the State Council in 1981, the supervisory authority of environmental protection agencies at each level to oversee the protection and improvement of the environment has been reaffirmed. This is the authority commissioned and bestowed upon us by the state and the people, and we must treasure this authority, we must not abuse the authority, we must exercise it. At present, not using such authority or being unskilled at using such authority is common. To protect people's benefits, the state and the people have given us supervisory authority, why is this authority not exercised well? This is because of resistance, can such resistance be broken? I believe, we still lack initiative, we lack the undaunted energy to "dig" and to "fight." First, we must criticize ourselves because we did not become the example. While we study how to improve the management level, we should seek the reasons within ourselves. This will benefit improving our work, otherwise, if we complain and blame others, we will not help the situation.

Environmental supervision has been implemented for over 10 years, and is an old problem. But, we also face a new situation, there is a lot of supervisory work to do; therefore, it can also be said to be a new problem. We must exert efforts to study this problem. We can say that whether a new situation can emerge in our nation's environmental protection work depends to a large degree on how we utilize this supervisory function.

## III

There are many means of environmental supervision. They are mainly divided into administrative, economic and legal means. Administrative means are policies drawn up by government agencies at each level according to the organizational and commanding authority and managerial duties given them by administrative laws, established laws and regulations, promulgated standards, to carry out supervision and coordination, to guide plans, to exercise necessary administrative interference, and to make decisions concerning various managerial tasks. Administrative means are important methods of environmental supervision. Because our nation's legal system is not sound and the legal concept is weak, such means have especially important significance. It is obviously insufficient to rely only on the environmental protection departments to exercise such means, we must organize and urge the governments at each level and the various professions to carry them out. Therefore, organizational and coordination work are very important.

So-called economic means are the means to promote the development of environmental protection and to confine or limit activities that are unfavorable to environmental protection by using the economic lever. For example, to encourage environmental protection, the policies of providing financial assistance for measures to prevent and control pollution and low interest loans, the policies of tax exemption and reduction for products that comprehensively utilize

"the three wastes," and the policies of not requiring profits to be submitted to higher authorities have all realized results in preventing and controlling pollution. In confining activities unfavorable to the environment, we implemented the system of levying charges for releasing pollutants over the established standards and this has also realized results in promoting the treatment of pollution, but our measures in confinement are not sufficient. Economic means have served, are continuing to serve greatly and even decisively to control pollution and to improve the environment in the capitalist system of private ownership of the means of production. In our nation where the means of production are publicly owned, economic means can also serve a great promotional function if they are properly used, especially if they are combined with the benefits of the localities, enterprises and workers.

Legal means constitute a method of supervision that is the most severe. All units and individuals must obey environmental laws. If anyone violates the law, he will be subjected to judicial process, and will be penalized according to different situations, and such penalties include criticism, warning, fines, compensation and investigation of administrative responsibility, economic responsibility, and even criminal responsibility. After promulgation of China's environmental law, judicial agencies of some localities began to review some cases of pollution or destruction of the environment, and such legal actions have created a great response among the people in the cities and villages, and such actions have manifested the power of environmental laws and served well as a warning.

But, not abiding by the law and not strictly exercising the law are common. Therefore, supervision of the implementation of environmental laws is a difficult task. Legal supervision is the major task of environmental management departments. But, just relying on environmental protection management departments is not enough. We must also mobilize the various professions and the broad masses to carry out supervision. Environmental protection management departments must actively support the people and masses in opposing environmental pollution and protecting the proper rights of the environment. We must actively develop the work of implementing the laws in cooperation with judicial departments. Some typical cases should be widely propagandized and publicized through legal proceedings to realize the goal of educating the people in obeying the law.

## V

At present, we must concentrate on the following supervisory work:

1. We should review environmental impact reports. This is a regulation stipulated by the nation's environmental law. This stipulation is based on "prevention." Before construction of a region, a project or a factory begins, their near-term and long-term impact on the environment must be investigated and analyzed on an overall basis. If the evaluation concludes that the impact on the environment will be detrimental, construction must cease; if the impact will not be large, they can be developed and constructed while taking preventive and control measures. This system changed the passive situation of the past when remedies were made after environmental pollution and destruction had been caused, and

reflects the positive policy of stressing prevention, and is a major development in environmental management. Conscientiously implementing this system can maintain a better living environment and natural environment during economic development. But, this system has not begun. An important reason is that our environmental protection management departments pay no attention or think little of it. To enable this work to quickly and concretely begin, we must first include it in the work agenda. At the same time, we must emphasize three things: First, we must establish the work procedure for reporting and reviewing environmental impact reports. We must do things according to procedure. Procedures are steps that must be followed in writing reports and reviewing environmental impact reports, for example, the reports to be reviewed and evaluated by development and construction management departments, related government departments and the masses (organizations). Finally, the report must be reviewed by environmental protection management departments. The procedures must not be complicated, we must realize practical results. But, the stipulation for review by the masses (organizations) I believe is important and should be included in the procedure. China's environmental protection principles include a stipulation to "rely on the masses, and everybody works." Article 8 of the environmental protection law clearly states that the citizen has the right to supervise, inform and accuse units and individuals who pollute and destroy the environment. This stipulation shows that the people and masses are the masters. We must materialize these regulations so that the people and masses can truly exercise their own authority. With the conscientious review by environmental management departments and practical supervision by the people and masses, the environmental impact evaluation system will be easy to implement. Second, we must have an evaluation agency. Environmental impact evaluation is a strongly comprehensive and scientific work. As construction develops, the evaluation task will become greater, and without a special agency and special team, we cannot meet the needs. To hasten the establishment of such an agency and to begin work and utilize suitable designs, research agencies are the most favorable. Before establishing such specialized agencies, we must utilize the design academies, scientific research agencies and universities and colleges more to develop evaluation work. Third, environmental advisory committees can be established at the national level and each local level to perform environmental evaluation and consultation services in other aspects. They can also carry out arbitration. They are mass organizations, but they shoulder many managerial and judicial tasks. They can develop a great function and they should be quickly established.

2. We should supervise the implementation of the "three simultaneous efforts." This is another vigorous measure to control environmental pollution and destruction. If we say that environmental impact evaluation is for controlling the rationality of distribution, then the regulation of the "three simultaneous efforts" is to control a project's unfavorable environmental impact. The two systems compliment each other, and both are indispensable. This regulation has been implemented for more than 10 years. Although there has been great progress, nationally, their implementation is not sufficient. Only 66 percent of the large and medium construction projects have implemented the regulation on the "three simultaneous efforts," and even fewer small scale construction projects have implemented the regulation. This regulation has been reiterated by the party and the state, why is it still not concretely implemented? This is the problem



in our work, we pay no attention to it and supervision is lax. There are also problems with the system, the lack of specific regulations including the duties of supervision and legal responsibilities of violators. We must improve in both these aspects before this work can be done well.

We should consider proposing the following goals to be done within the next 1 or 2 years: All new projects, expansion projects and reconstruction must implement the regulation on the "three simultaneous efforts" as long as the projects produce an environmental impact. Those that do not implement the regulation will not be allowed to be built. Those that continue work defiantly will not be checked and accepted by the government and will not be allowed to begin production. I believe that with effort this goal can be realized.

3. We must conscientiously handle the environmental impact of urban neighborhood industries and rural commune and brigade enterprises. Such small industries that have rapidly developed in the cities and villages have created new problems for the environment. If they are not appropriately controlled, they will create serious consequences. More and more disputes due to pollution by small industries have emerged, but we lack investigation and research and we do not clearly understand the situation. Controlling the environmental impact of small industries mainly involves taking measures in product structure, construction distribution and prevention and control of pollution. We must quickly establish practical and effective countermeasures on the basis of investigation and research.

4. We should strengthen supervision of the efforts by old enterprises to prevent and control pollution. At present and for a long time, industrial pollution has been a large polluting source and it is the key point of pollution control. The task of environmental management is to promote the prevention and control of industrial pollution by supervision and other managerial means. What means do we rely on to carry out supervision? We should rely on environmental laws and standards. Environmental management departments have the right to supervise everything that is within the scope of the stipulations of environmental laws. At present, the following three areas should be supervised:

The first is the supervision of treatment projects that have a time limit. Related ministries and commissions of the State Council had stipulated the first group of 167 pollution treatment projects that have a time limit. Each region has also stipulated a group of treatment projects that have a time limit, this is an effective measure to control industrial pollution. The important and the less important, the urgent and the less urgent tasks must be differentiated. In the future, we can continue to stipulate such treatment projects that have a time limit. The task of the environmental management department is to supervise the implementation of such projects according to the stipulated content of treatment and the schedule of completion. There must be administrative or economic measures to treat projects that are not completed according to schedule or cannot meet the requirements.

The second is to supervise the readjustment of irrational distribution. At present, environmental pollution is very serious in many regions of our nation, an important reason is the irrational distribution of industry. If this situation

is not changed, it is not possible to have a clean and suitable living environment. Therefore, we must combine industrial readjustment, and close, suspend, merge, retool or move industrial enterprises that are irrationally distributed, cause serious pollution and do not have effective measures for treatment. According to incomplete statistics of 26 provinces, cities and autonomous regions in 1981, among the nearly 8,000 industrial enterprises that were closed or ceased production, many were of such situations. We must vigorously publicize this problem, take the initiative to cooperate with concerned departments, establish readjustment plans, strive to visibly improve the irrational distribution of industries in densely populated regions, regions of protected water source and scenic and tourist regions.

The third is to supervise the release of pollutants exceeding the standards. Recently, the State Council promulgated the "provisional measures to levy pollution charges." It clearly states that the regulations shall be implemented throughout the nation, this will further promote the development of preventing and controlling pollution. As long as we can obtain accurate monitoring data, as long as the standard for charges are appropriate, as long as the use of the funds is rational, and as long as our efforts are joined with other managerial means, we can make the system of levying pollution charges develop a positive function in promoting business management and in preventing and controlling pollution.

5. We should strengthen supervision in protecting rare biological resources and their living environment. This is a new task of environmental protection departments after the reform of national agencies. It is very significant work. We are still unfamiliar with this aspect of work; therefore, we must first understand clearly the present situation of rare biological resources and their distribution on the basis of investigation and research, and control the destruction and exportation of rare biological resources by designating protective zones and by placing restrictions on domestic and foreign trade.

## V

To effectively carry out environmental monitoring, we must also make environmental laws sound and grasp necessary monitoring means. Making environmental laws sound is not an easy task. We must exert a lot of effort. At present, we must first establish laws that have a wide influence so that environmental supervision can be based on laws and can follow established standards. Recently, certain rules, regulations and standards were supplemented and revised, and a group of standards were issued. At the same time, we are writing "laws for the prevention and control of atmospheric pollution," "laws for the prevention and control of water pollution" and "laws to control city noise." We should strive to quickly promulgate them by the state. Each area must establish regional rules and standards for environmental protection according to the specific local conditions of each region.

Environmental monitoring is an important means of environmental management. Without a complete monitoring network that is timely, accurate and within the major environmental regions, it is not possible to carry out effective environmental

monitoring. At present, our nation's environmental monitoring agencies are weak, the network is not complete, there is a lack of specialized personnel, technical equipment is out-dated and unsuitable to the needs of monitoring tasks. Therefore, in our own buildup, we must take the buildup of monitoring agencies as a key point and must strive to form an environmental monitoring network that can adapt to the needs of monitoring tasks within 3 to 5 years.

9296

CSO: 5000/4103

USING ECONOMIC MEANS TO STRENGTHEN ENVIRONMENTAL MANAGEMENT URGED

Guangzhou HUANJING [ENVIRONMENT] in Chinese, No 8, 1982, pp 2-3

[Article by Qu Geping [2575 2706 1627], bureau chief, Environmental Protection Bureau of the Ministry of Urban and Rural Construction and Environmental Protection: "Promulgate Economic and Technical Policies Favorable to Environmental Protection"]

[Text] Over 10 years of practice have taught us that in economic and social development, there are many ways to maintain a good environment, and appropriate policies are a key issue. Therefore, developing environmental policy has become a basic function in environmental management. Here, I will discuss some ideas regarding economic and technical policies concerning environmental protection.

I. Encouraging comprehensive utilization, recycling waste material and turning waste into valuable products are important economic and technical policies in China's environmental protection work. They mark the development towards a beneficial cycle in the process of material exchange in promoting "man and environment," and are an effective way to avoid a vicious cycle. They are the maximum utilization of material resources and a positive measure to reduce the release of pollutants to the minimum. Because most of our nation's enterprises have outdated equipment, because their technology and techniques are backward, because of poor management and other objective reasons, the comprehensive utilization rate of energy resources is low, waste is large, and pollution is serious. For example, at some enterprises of the chemical industry, only one-third of the chemical raw materials is converted to products, the remaining two-thirds become waste gases, waste fluids, waste slag and are released into the environment. To rapidly change this situation, the state has ruled that "enterprises that use waste gases, waste water, waste slag as the main raw material for producing products are given tax breaks, are tax free and are subjected to a favorable price policy. Profits need not be submitted. The enterprises can use the profits to treat pollution and improve the environment." The state's environmental protection departments and the financial departments have also jointly promulgated "the methods and regulations concerning the treatment of pollution by the 'three wastes' at industrial and mining enterprises and rules concerning the retention of percentages of profits from the development of products from comprehensive utilization." The implementation of this policy has realized large economic gains and environmental results for the state. Statistics of the metallurgical sector alone showed that in 1980, the production value of products from comprehensive utilization reached over 800 million yuan including as much as over

50,000 tons of recovered nonferrous metals, precious metals and rare metals. The ferrous metals smelting enterprises recovered and utilized high concentration sulphur dioxide smoke each year to produce over 800,000 tons of sulphuric acid. Other sectors such as building materials, light industries, chemical industries, electric power, petroleum industries have all realized good results in both economic and environmental aspects. Our nation began to recover used products and to utilize waste rather early. Efforts to recover waste and oil materials began at the beginning period of the founding the nation. This is another aspect of comprehensive utilization. According to statistics, during the 25 years before 1980, a total of 120 million tons of materials were recovered with a value of 24.6 billion yuan. They included 59.85 million tons of discarded and used steel and iron and 185,000 tons of raw materials for paper manufacturing. Conservation of timber and caustic soda realized large gains, respectively equivalent to onefold and twofold the total amounts of national production in 1980. The achievement in recovering precious metals was also sizable. The three cities of Beijing, Tianjin and Shanghai alone extracted 41,000 ounces of gold and 169,000 kilograms of silver, 15,000 tons of nonferrous metals, and 41,000 tons of chemical raw materials from waste and used materials between 1966 and 1980. This is a sizable amount of wealth.

II. Implementation of technical improvements and controlling industrial pollution are important economic policies. The "decision by the State Council to strengthen environmental protection during the period of national economic readjustment" promulgated in 1981 stipulated: "In technical improvements centered around energy conservation, we must view the elimination of pollution and the improvement of the environment as important goals. We must improve technology, renovate equipment and at the same time, solve the pollution problem." Our nation's sources of pollution mainly come from the industrial and transportation enterprises. Industrial pollution is produced during the course of production, elimination of pollution must also be carried out during the course of production. Experience proves that the positive measure to control pollution is technical improvement. The main way is to improve technology, renovate equipment, reduce the amount of pollutants released; select and use nontoxic or low toxic raw materials to replace toxic and harmful raw materials to eliminate or reduce pollution; develop comprehensive utilization to turn "waste materials into resources."

III. The system of charges for exceeding emission standards is a policy established by the state to prevent and control industrial pollution. Article 18 of the "environmental law" stipulates: "A pollution fee based on the quantity and the concentration of pollutants released must be levied according to regulations for releasing pollutants beyond the limits stipulated by the state." It is an effective way that uses economic means to strengthen environmental management and promote the control of polluting sources to achieve environmental quality requirements. Since 1979 when the national environmental protection law was promulgated, the Standing Committees of the National People's Congress and the People's Government of 22 provinces, cities and autonomous regions throughout the nation have promulgated laws or regulations for levying pollution fees for releasing pollutants beyond established limits. Some of the local and municipal people's governments of other provinces, cities and autonomous regions have also made corresponding rules. About 40,000 enterprises and units have already been subjected to this charge. Implementation of the policy to charge

a fee for releasing pollutants has realized good results mainly because of the following: First, it has promoted the enthusiasm of the enterprises to control pollution. Because the criteria for the charges are slightly higher than the cost of building and operating facilities to prevent and control is better than paying the fine, treating pollution early is better than treating it late, and thus the self-consciousness of the enterprises has been mobilized and they have taken the initiative to include environmental protection into production management efforts of the enterprises themselves, and they do not regard the prevention and control of pollution as extra work anymore. Second, it has strengthened the supervisory function of environmental protection departments, improved the technical skills in environmental management, and promoted environmental monitoring.

IV. The policy that "whoever pollutes must treat pollution" has been implemented. This policy stipulates that enterprise units should be responsible for polluting the environment and the loss thus caused. This has changed the passive situation of the past when enterprises and their administering departments did not emphasize environmental protection and were not enthusiastic about treating pollution. After this policy was determined, the state publicized the names of 167 industrial and mining enterprises in October, 1978, as the major polluting sources and established a time limit for them to treat pollution. By the end of 1981, two-thirds of the task of treating pollution had been completed. The petroleum industry had completed 84 percent of the task of treating pollution. The policy not only realized results in improving the environment it also realized results. It can be seen that when a correct policy is implemented, it can produce significant results. Every province, city and autonomous region has also implemented policies ordering many of their subordinate sources causing serious industrial pollution to treat pollution and they have similarly realized good results.

9296

CSO: 5000/4076

## STATE COUNCIL ISSUES INDUSTRIAL POLLUTION RULES

OW221105 Beijing Domestic Service in Mandarin 1200 GMT 18 Feb 83

[Text] The State Council recently formulated regulations on preventing industrial pollution through technical transformation.

The regulations say: Currently, industrial pollution is very serious in China. It is the main cause of environmental pollution. All localities should regard prevention of industrial pollution as an important task while carrying out technical transformation in existing industrial enterprises. They should eliminate pollution in the process of production by adopting advanced technology and equipment and by making better use of resources and energy. All industrial enterprises and supervisory departments must incorporate requirements and technical steps for preventing pollution into their technical transformation plans. They should also make arrangements in their annual work plans to meet the requirements and implement steps for preventing pollution.

The State Council's regulations add: Technical transformation plans should be concerned not only with benefits to the respective enterprises, trades and departments but also with the overall benefit to the national economy, as well as the state's policy of rewarding plants, mines and enterprises carrying out comprehensive utilization and preventing and controlling pollution. The State Council's regulations say: To successfully protect the environment through technical transformation, we have to exercise control and strengthen management simultaneously. We should formulate and improve the rules and regulations on environmental protection and clearly define the responsibility of enterprises and workers to society and to the enterprise respectively in environmental protection. Proper management of the environment and prevention of industrial pollution should be listed as requirements which enterprises must meet before they are accepted as having successfully undergone consolidation.

CSO: 5000/4138

## CONTENTS, MISSION OF ENVIRONMENTAL GEOLOGY DISCUSSED

Changchun CHANGCHUN DIZHI XUEYUAN XUEBAO [JOURNAL OF CHANGCHUN COLLEGE OF GEOLOGY] in Chinese No 2, 1982 pp 145-150

[Article by Wang Baojin [3769 1405 6855] of the Chinese Institute of Environmental Science: "Discussion On the Contents and Aim of Environmental Geology"]

[Text] Environmental geology is a new branch of science developed from geological science and other related scientific disciplines, it is also the most important and the most fundamental branch of environmental sciences.

Judging from research in China and abroad, environmental geology has a history of only a dozen years; but because of the continuous occurrence and increasing severity of environmental geological problems, it is receiving more and more attention from scientists. Along with the development of modern science and technology and the modernization of industry, agriculture and urban development, the effect on the geological environment due to extensive exploitation of mineral, ground water and land resources is becoming increasingly acute. It is hard to imagine the difficulty of solving some of the problems in environmental geology. Therefore, we are confronted with the urgent tasks of preventing and alleviating the deterioration of the geological environment and properly recognizing the relationship between man and the geological environment.

### I. The beginning of environmental geology

Although geological sciences have been in existence for a long time, the study of the relationship between the geological environment, human life and the social environment has been far from adequate. Efforts in the past have been concentrated on finding and exploiting mineral resources and the geological environment has not been organically connected to the human health situation, even today there is still a lack of recognition and attention. Geological environment has been changing ever since the earth has been in existence; it has gone through a long period of geological history and there have been major changes in each geological period.

The formation of the earth crust provided the fundamental material condition for the existence of humans and other living things. Since the appearance of the human race, there has been unconscious and conscious development and exploitation of geological resources and changes in the environmental geological conditions. The survival and extinction of humans and other living things are



closely related to environmental geological conditions such as minerals, soil and ground water. For this reason, environmental geology emerged a long time ago. Although the ancient Chinese environmental geology did not form a scientific system, the geological effects on human health and construction endeavors have been recorded in ancient literature (such as records of earthquake damage more than 2000 years ago). This relationship is most obvious with regard to minerals, rocks, soil and ground water. Our ancestors have discussed the effects of water quality on human health. Lu Yu [7120 5038] of the Han Dynasty first proposed the relationship between tumors on the neck and drinking water. In recent years, the correlation between cancer, cardiovascular disease, birth and paralysis and the distribution and content of chemical elements in minerals has been studied with modern equipment.

In the 1950's irrigation with urban sewage was developed in China and abroad and polluted the soil and ground water, this has attracted the attention of hydrogeology workers. In many areas investigations were also conducted on local diseases such as Kaschin-Beck disease, osteo-hypertrophic, fluoride poisoning, goiter and rickets. In the 1960's environmental geology problems became even more acute as the industrial development moved forward at a fast speed. Due to the excessive use of ground water, the water level at many regions went down and gave rise to funnel phenomenon, the ground dropped in some cities and some areas were flooded by ocean water. The liberal discharge of industrial waste water and refuse led to the pollution of ground water and surface water and the water quality deteriorated. As a result, there have been rapid developments in environmental geology, many European and American countries have established research institutes of environmental geology, promoted academic activities and published journals. Similar research has also been developed in China and considerable results were obtained. In the 1970's, environmental geology had further developments. Microscopic and macroscopic environmental geology research institutes were established in China and abroad to investigate subjects on the rational development and exploitation of mineral and ground water resources, ground water pollution investigation, disasters in environmental geology and their prevention and remedy, monitor of environmental geology and the prediction and evaluation of the environmental geological quality. The studies have gradually changed from qualitative to quantitative and from point to area. As can be seen, the emergence and development of environmental geology have their origin in human needs and are the natural consequences of the development of the productive forces of society and the modernization of science and technology. The viewpoint that "environmental geology is simply environment plus geology" is a biased one. The Environmental Protection Act promulgated by China touches upon the contents of environmental geology in a number of places. The research on environmental geology has shown a strong vitality in environmental protection sciences, it has played an active and progressive role in the exploration and handling of the interrelationship between mankind and other living creatures, the lithosphere and the aquasphere, and in the transformation and utilization of environmental and geological resources.

## II. Aim and function of environmental geology research

The purpose of establishing environmental geology is to understand and master the characteristics and rules of distribution and change of the environmental

and geological conditions, to predict and evaluate the short-term and long-term effects of human and production activities on the environment, to prevent and reduce the hazards of environmental and geological interactions, to improve human health and promote normal biological growth, to develop, utilize and protect mineral, ground water and earth resources, and to propose an environmental and geological basis to serve the socialist construction.

The function of environmental geology is to study the environmental and geological conditions and their changes, to explore the interdependence, constraint, interaction and transformation among geological phenomena in the environment and the ecological balance in nature and other natural factors, and to investigate and interpret the principles of development, the static and dynamic changes in geological phenomena and their relationship to human production activities. In other words, to explore the movement and accumulation of chemical elements in the earth crust, to understand their effects on human health and natural ecology and to protect, improve and utilize the geological environment so as to ascertain the harmonious development of man and the geological environment.

### III. Topics of study and methods in environmental geology

The subject of study in environmental geology is the geological environment we live in. It includes two areas: one is the natural characteristics and changes of the geological environment itself, namely, the natural geological environment or the primary geological environment. This is also known as the first geological environment, such as the study of environment and geological conditions on regional diseases. The second area is the new changes of the geological environment caused by interaction with human and biological activities; namely, man-made geological environment or secondary geological environment, such as the study of pollution. Both areas involve beneficial and hazardous effects.

Research in environmental geology makes use of the knowledge and methods in stratigraphy, lithology, mineralogy, structure geology, geomorphology and the Quaternary period; in addition, it must also make full use of the scientific knowledge and methods in hydrogeology, engineering geology, geochemistry, volcanology, seismology, geophysics, and economic geology. It also involves the knowledge and methods of other natural sciences such as hydrology, meteorology, geography, modern physics, chemistry, medicine, economics, ecology and mathematics. Environmental geology research also uses remote sensing technology, laser technology, automatic monitor techniques, advanced analysis equipments, computer technology and other new techniques and methods.

Environmental geology should include environmental hydrogeology, environmental engineering geology, environment geochemistry, medical geology, military geology, environmental planning geology, environmental thermal geology, resource and energy geology, environmental seismogeology and oceanographic environmental geology. The contents of environmental geology can only be complete through interdisciplinary research.

### IV. Contents of environmental geology research

Based on relevant data and environmental geological problems appearing in China and abroad and combined with the author's personal experience, environmental geology research should include the following major topics.

## 1. Research on the exhaustion of ground water and the deterioration of water quality

Along with the development of industry, agriculture and science and technology and the liberal dumping of solid waste, sewage and liquid waste and exhaust gas from plants, mines and cities, the surface water and ground water are seriously polluted and water quality has deteriorated. In the United States, for example, 3.8 billion tons of industrial waste water are discharged every year and cause various degrees of pollution in 52 major rivers and lakes. One third of the ground water supply in four states is polluted, the remaining two thirds will be polluted. In Tokyo, Japan, all 117 water sources are polluted.

Ground water contamination in China is also serious. According to survey results, ground water has been contaminated to various degrees in more than 40 cities. The principal pollutants are phenol, cyanogen, arsenic, mercury, chromium and nitrate. The hardness of the ground water is also below the acceptable level in most cases. Cities with serious pollution problems include Beijing, Shenyang, Taiyuan, Baotao, Baoding, Changchun, Jinzhou, Jilin and Lanzhou, followed by Shanghai, Nanjing, Wuhan, Anshan, Harbin, Urumqi, Chengdu, and Guilin. In addition, many medium-sized cities also suffer from various degrees of ground water contamination, such as Jining.

Ground water is being exhausted because of excessive exploitation. In arid and semi-arid areas in northern China, ground water has become an important water source and the main target of exploitation for industry, agriculture and daily use, the water resource problem is particularly acute in these areas. The problem involves both the volume of water and water quality. The seriousness of the water quality problem has been discussed above and we shall concentrate on the problem of water volume. Most of the cities in China rely mainly on ground water resources but the volume of this resource in most cases exceeds the amount of replenishment. As a result, the level of ground water continued to drop and funnels were formed in some areas. Water-bearing layers were drained dry, water sources were exhausted and grave economic losses have occurred. In Shenyang municipality, because the ground water level suffers an average drop of 0.5 meters per year, each year requires an increase of 550,000 yuan in water exploitation costs, 18 million kwh of extra electricity consumption, 6 million yuan for new wells, 3 million yuan for equipment operation and 100 million kwh of electrical power consumption. In Beijing the ground water level has generally dropped by 4-10 meters and has dropped to 30 meters at the center of the drilling area, affecting adjacent countries. Based on present usage, the level is dropping at a rate of 0.5<sup>2</sup> meters per year, the water level will drop 10<sup>4</sup>40 meters by the year 2000. This is indeed a serious problem.

Excessive exploitation of ground water has also caused the deterioration of water quality in some cases. In coastal areas such as Luda, Ningbo, Tianjin and Shanghai, excessive use of ground water has led to ocean water invasion, the salinization of soil and a reduction in agricultural production. Since 1968, the area of ocean water invasion in Luda municipality has grown and approached 50 square kilometers in 1978. This has caused the salinization of vast vegetable farms and greatly deteriorated the quality of industrial water and well water. In Qinhuangdao municipality, the ground water in the Quaternary period strata has almost all been exhausted and resulted in ocean water backup.

In order to protect and rationally develop ground water resources, we must conduct investigation and research on environmental hydrogeology. Topics to be studied should include the origin of pollutants, the passage of pollutants and the severity of contamination, the osmosis, transport, accumulation, neutralization and cleansing processes of the pollutants in the strata, the monitoring of the dynamic changes of ground water quality and volume, the prediction of development trend in ground water pollution and proposals for controlling and preventing ground water contamination.

## 2. Research on the hazards due to natural geological action and man-made factors

Excessive exploitation of ground water can cause the ground to settle and damage urban buildings; underground pipes and wires may be twisted and broken, causing leaks of gas, water and electricity. In Japan, 41 locations in 29 cities and counties in the coastal planes have suffered different degrees of ground settlement. The most serious ground settlements occurred in Tokyo, Osaka, Nigata, Kawasaki, Yokkaichi, Yokohama and Amagasaki, the settlement area has increased at an average rate of 1 square kilometer per year and the ground falls at an unusual rate of almost 20 millimeters per year. In Nigata county, large areas of ground settlement have also been induced by the development of water soluble natural gas. The area of the Nigata settlement is as large as 830 square kilometers and the compressed soil is 600 meters deep. In northern Kyushu in Japan, the mining of underground coal seams at Joban and Fukuka coal mines has caused the ground to settle as much as 7-8 meters. In China, ground settlement caused by excessive use of ground water is also serious in Shanghai and Tianjin and undesirable consequences are beginning to be noticed. In Guiyang municipality, excessive exploitation of interstitial water has caused a number of ground collapses in the city and the roadbed of the suburban railroad was also damaged.

The earth never ceases to rotate, crust movement and magma activity have never stopped. Since the appearance of humans, there have been changes in the environmental geology such as earthquakes, volcano eruptions, rise and fall of the ground, invasion and recession of the ocean, and erosion of the coast; there have also been rupture and dislocation of the strata due to geological building activities. Avalanche, collapse, landslide, mud and rock flow caused by rock instability can all bring destruction to society and threaten the survival of human beings. Therefore, research from an environmental engineering geology point of view must be conducted, it is an important issue to study in the relationship between man and his geological environment and should belong to the contents of environmental geology studies.

## 3. Research on the relationship between environmental geology and human health

This is a topic for medical geology research and encompasses the contents of environmental chemistry research. It studies the effects of the soil and rock in the early crust, the minerals, water, and their chemical composition on the health and disease of human and animals. The distribution of regional diseases depends on the environmental geological conditions; for example, certain mountainous regions and areas that lack iodine may have more goiter patients, arid

basins or other high fluorine areas may have problems with fluorine poisoning. The regional distribution of Kaschin-Beck disease and goiter follows a certain pattern, such diseases occur in regions where soluble inorganic element ions tend to be washed away and in regions short of selenium. The osteo-hypertrophic, however, occurs mostly in areas where the drinking water lacks  $SO_4$ . The distribution of these diseases are clearly correlated to the environmental geological conditions. Other examples include the high occurrence of bacal tumors in India; the number of mammary gland tumors in Israel are 8 times that in Japan; the rate of stomach cancer in Japan and Iceland is high; the rate of liver cancer among tribes in Africa is high, cancer of the liver is distributed mainly from the equator to the temperate zone; Asia has more regions with a high occurrence of cancer of the esophagus distributed along a band from the mid-east to northern China. These examples show the connection between regional disease and the environmental geological and geographical conditions. In China, the distribution of various cancer shows clear regional differences; cancer of the liver is high in Jiangsu, Shanghai, Zhejiang, Fujian, Guangdong, and Guangxi, cancer of the esophagus is mainly concentrated in the triangular mountainous area of Henan, Shanxi and Hebei, in northern Jiangsu, in the coastal area of Fujian and Guangdong, the northwestern hilly area of the Sichuan basin, the Kazakhs grazing regions in Xinjiang and in the Dabie mountain area bordering Hubei and Anhui. Kaschin-Beck disease and osteo-hypertrophic patients are distributed in some cities and counties in Heilongjiang, Jilin, Liaoning, Shandong, Hebei, Shanxi, Henan, Shaanxi, Gansu, Sichuan, and Yunnan. The distribution of the Kaschin-Beck disease basically coincides with the distribution of osteo-hypertrophic, the distribution is related to conditions such as geomorphology, rock properties, mineral distribution, volcanoes, swamps and water quality.

The Chinese have been studying the relationship between human health and the geological and geographic environment and minerals. It was pointed out in the medical book "Basic Questions--Various Medical Treatments" that because different geographic locations have different topography, hydrology, and weather conditions, their residents have different living habits that in turn affect health conditions, cause different diseases that require different treatments. Chinese physicians and pharmacists have long been using minerals in medicine to treat patients, more than 100 minerals were used for medical purposes in the Tang Dynasty. Ming Dynasty physician and pharmacist Li Shizhen [2621 2514 3791] compiled 253 different mineral drugs and in the Qing Dynasty Zhao Minxue [6392 2404 1331] added 38 more in his book "Addendum to Herbal Medicine Classification." These minerals are still used today, those frequently used include hematite, magnetite, pyrite, limonite, zincite, arsenic, copper pyrite, realgar, talc, halogen, serpentine, alumstone, gypsum, limestone, kaolin, stalactite, salt, mirabilite, borax, actinolite, mercuric ore, cinnabar, sulphur, quartz and loess. Of course, we should know the effects of minerals on human health; recently people have classified more than 70 mineral drugs containing the following elements: mercury, iron, lead, copper, calcium, sodium, silicon, aluminum, arsenic, etc.

The use of rocks, minerals, and chemical elements in water also have gone through a recognition and development process. In ancient times only 18 elements were used, in the 18th century 29 were used, 62 in the 19th century, 89 in the 1960's and more than 100 in the 1970's.

In the early 1970's, the research group led by British geochemist Dr Hamilton discovered, for the first time, that the average quantity of many chemical elements in the human body is clearly correlated with the average quantity of chemical elements in the earth's crust. The earth is a warehouse of chemical elements, these elements diffuse and enter the atmosphere and the aquasphere in different forms and by different modes, they may also be absorbed, stored or transformed by human and other living things. These processes invariably cause different distribution. Chemical analysis and measurements made on different tissues of the human body showed that various elements have district selectivity. For example, cadmium, strontium and aluminum tend to accumulate in the brain tissue; lead, samarium, chromium, zinc and copper tend to accumulate in the liver tissue, and uranium, antimony, manganese and lithium tend to accumulate in the lymphatic tissue. Zinc deficiency in the human body may cause a variety of ailments, and chromium, lithium, fluoride and the hardness of water all affect human health. This shows that the human body is closely related to the environmental geological conditions, excess or deficiency of some chemical elements may cause disease in certain organs. Research in China and abroad have shown that for different environmental and geological conditions, the human health conditions are different and the distribution of disease has a pronounced regional character.

Environmental pollution causes many public hazards, mercury contamination causes mercury poisoning or Minamata disease, cadmium contamination may enter the human body through water or crops and cause the "aching syndrome," pollutants such as lead, phosphorous, and potassium are also hazardous to human health. The "three wastes" discharged in the process of industrial production pose a great threat to the existence of humans and other living things. In addition, soil erosion due to mining developments causes some chemical elements to diffuse and reach populated areas, excessive amounts of such elements lead to health hazards.

Therefore, whether they are in the primary geological environment or in the secondary geological environment, chemical elements affect human health and disease. They have become a major research area in environmental geology.

#### 4. Research on geological resources, the development and utilization of energy resources and environmental protection

Geological resources include various mineral resources (metal, nonmetal, organic and inorganic) such as ground water, uranium deposits, coal mines, oil and natural gas resources, geothermal resources, rock, soil and scenic geological resources. The goal of research is to make geological resources serve society to the maximum extent without adverse effects to the environment. Research topics should include the consequences of extensive exploitation of ground water, the environmental impact of mining developments, the adverse health effects due to chemical elements in geothermal resource development, the relationship between minerals and human health, and so on.

It is vitally important to study these problems. Based on information for some cities in China and abroad, irrational development of ground water resources leads to serious, adverse environmental effects. Although the environmental deterioration caused by unplanned, excessive and continuous exploitation of ground water are different in various locations, they do share many common environmental problems.

## NEW LOOK AT LAND USE, PROTECTION URGED

Beijing HUANJING BAOHU [ENVIRONMENTAL PROTECTION] in Chinese, No 7, 1982, pp 24-26

[Article by Mao Wenyong [3029 2429 3057]: "Civilization and Soil Protection"]

[Text] (I) Precious Resources

Soil is a limited resource, it is especially precious in our nation with such a huge population. We now have a population of 1 billion, and by the end of this century it may reach 1.2 billion; land will not increase, on the contrary, it will gradually decrease. For example, in 1957 China had 1.67 billion mu of cultivated land, averaging 2.59 mu per person. Later, 250 million mu of wasteland was reclaimed, but by 1977, the nation had only 1.49 billion mu of cultivated land. In 20 years, cultivated land decreased 430 million mu, a net decrease of 180 million mu. Today, China's average per capita area of cultivated land is about 1.5 mu, only one-eighth the average in the United States, one-seventh that in the Soviet Union, and two-thirds that in India. This is too little. Unfortunately, people still do not treasure the precious land remaining. Land is decreasing at an alarming rate and an immediate halt to this decrease cannot be foreseen.

Soil is almost a non-regenerative source. Under natural forces, the earth's surface creates a soil layer of about 10 centimeters thick an average of every thousand years, each year, the earth creates only a layer thinner than a sheet of paper. This rate of regeneration does not replenish land that is rapidly being used up and eroded.

The importance of soil to humans cannot be substituted. History shows that the rise and fall of civilizations is determined by the development and utilization of natural resources, the most important is the development and utilization of soil resources. But for thousands of years, people believed that land was inexhaustible. They reclaimed, planted and allowed soil to erode until the land became infertile and could not be used for planting, then they abandoned it and reclaimed new virgin land. This method of development has caused mankind to lose a lot of land. Such cases have been documented in foreign and Chinese history books.

Today science and technology are developed, in addition to special industrial and mining areas, the population, culture, economy, science and technology are

concentrated in regions of fertile land. For example, China's Chang Jiang Delta, Pearl River Delta, Beijing and Tianjin area are all regions of fertile land. Also, like North America and Western Europe, the land is fertile, products are abundant, and science and culture are more developed. Therefore, we may say that soil is the foundation of human civilization. Protecting the soil of the motherland is a task affecting the prosperity or decline of the Chinese nation.

## (II) Problems Facing the Soil Environment

Soil includes natural soil (forests, grasslands) and agricultural soil. Because mankind's productive activities are becoming larger in scale, natural soil is being affected and controlled by mankind day after day, the word "natural" has gradually lost its original meaning. The entire soil environment is being affected more and more by mankind.

Soil erosion is worsening. On soil with primitive vegetation, trees and wild grass withstand torrential winds and rain. Fallen leaves and branches cover the entire ground surface, protect water and soil so that they are not easily scattered and lost, and provide food rich in microorganisms for the soil. Living organisms and the soil support each other, forming an ecology of fertile land and prosperous life. But, after land is reclaimed to become farmland, the ecological environment undergoes a fundamental change. Sparse crops can not fend off the pounding of torrential rain against the granules of soil. Exposed ground surfaces that lack vegetation are subject to sunshine and wind, thus they lose their moisture and fertile surface layers of fine soil. Monoculture also absorbed inorganic and organic fertilizers in the soil and along with the harvest, these fertilizers were carried away from the soil's ecological environment. Year after year, soil fertility continued to lessen, causing soil quality to worsen. Thus, soil erosion accelerated.

According to estimates by the U.S. Department of Agriculture, since cultivation of the North American continent began only 200 to 300 years ago, about one-third of the surface soil of the United States has been lost. Soil erosion in our nation is also very serious. In Sichuan, 640 million tons of mud and sand are washed away by the Chang Jiang to the lower reaches, equivalent to a loss of a layer of fertile soil 5 cun thick from 5 million mu of cultivated land. During the middle of July 1981, when an especially large flood occurred in Sichuan, the sand content in Chang Jiang reached 0.7 percent, an increase of over onefold from 20 years ago. In the hilly regions in Shandong Province, each year, over 200 million cubic meters of soil are lost in erosion. The amount of nitrogenous, phosphorous and potassium fertilizers lost is equivalent to 3.5 million tons of chemical fertilizers. At present, the thickness of the soil of the hilly regions in Shandong is mostly less than 30 centimeters. If we cannot stop such a rate of erosion, the land may not be able to be used for many more years before the soil is completely eroded away. Our nation's loess plateau has always been famous for its serious soil erosion, "one dan of runoff water contains several dou of mud" is a vivid description.

The emergence of soil pollution. Because the waste substances released by industry directly pollute farmland, this frequently causes a reduction of crop output and a lower quality.



Besides direct pollution, an even larger area of soil has eroded slowly over long periods, such as erosion by "acid rain." "Acid rain" is formed mainly by the burning and release of sulfur dioxide and waste gases of nitrogen and oxygen compounds. They not only directly damage the growth of crops, they also promote calcium, magnesium, potassium, phosphorus and such nutrients in the soil to dissolve in water, and thus increase the loss due to leaching and filtration. Leaching and filtration of various types of nutrients increased 2 to 10 times, thus decreasing soil fertility.

There are many kinds of soil pollution: The settling of industrial dust and ash, exchange of waste gases, inflow of sewage, piling of waste slag will all bring waste substances into the soil. This trend is increasing today and there are no signs of reduction. This is a new problem brought upon the soil by modern life.

Pressure upon modern agriculture. Marx once said: "No matter how advanced capitalist agriculture is, it will always be a progress of the skills to rob the laborers and it will be a progress of skills to rob the land. Within a fixed period, any progress in improving land fertility will at the same time, be a progress in destroying the long lasting resources of land fertility. The more a nation uses large industry as the beginning for its own development, the more rapid this destruction process becomes." Today, we have all seen the situation described by Marx.

Since the 1950s, agricultural machinery has rapidly replaced manual operation in developed capitalist nations. To adapt to the requirements of machine planting, inorganic chemical fertilizers have gradually replaced organic fertilizers. Great progress in food grains production is stimulated within a short period. However, because the soil lacks organic substances, the soil structure is destroyed and erosion is increased. This affects the existence of fungi in the soil (such as root fungi--which help plants absorb nutrients from the soil), and increased output of food grains is limited. To improve soil fertility, more chemical fertilizers are applied. But the extra chemical fertilizers cannot be completely absorbed by the plants, and they flow into the rivers, lakes and seas with runoff and cause environmental pollution. In addition, to facilitate machine planting, single crops are planted over large areas, and as a result, land fertility drops further and diseases and insect pests increase. Thus, large amounts of farm chemicals have to be used. This has created the present global problem of pollution by pesticides.

The productive capabilities of modern agriculture have improved greatly. This means, more substances have to be taken from the soil, and the blow to the soil will be more violent. In the course of agricultural modernization, the problem of how to maintain ecological balance in the soil and how to protect the soil will be a very complex and difficult problem.

Good farmland and fertile soil have been used. Urbanization is also one of the major problems that has emerged during this century. Cities are mostly built in regions where the land is fertile and where there are abundant products. Therefore, urban expansion frequently takes up large expanses of good farmland. According to reports, Beijing city takes up 100,000 mu of good farmland each

year. Since liberation, the area of cultivated land in the Beijing suburbs has shrunk by one-third. The city limits of Wuhan have now reached 150 square kilometers, three times the area at the beginning of liberation. This shows that the occupation of land by urban construction is shocking. In addition, to connect the cities with the industrial and mining regions, we must also build railroads, highways, stations, harbors, and thus, large expanses of land are buried under road foundations. On the grasslands in Nei Monggol, cars can travel freely and at some places, the road surface is over one kilometer wide, causing serious erosion of the soil. This is one reason affecting the construction of grazing fields. We can see how great the influence of this problem is.

A lot of land is being used for construction in our nation's small towns and broad numbers of farm villages. The waste of land resources is very serious. For example, commune members of Fuchuan County in Guangxi built new houses in the winter of 1980. It was estimated that each family occupied half a mu of paddy fields. Actually, the farmland occupied by each family enlarged by 2 mu. There is a production team in Fujian which had only 140 mu of cultivated land, but in the spring of 1981 alone, it built houses that occupied 40 mu. These cases show the serious degree of land occupation by housing construction at present! They also expose people's lack of understanding of the land!

It needs to be pointed out that the occupation of land by construction is a permanent destruction of land. In the past 20 years, the average area of land occupied by capital construction each year in our nation reached 25 million mu. This speed of occupation must never continue.

### (III) Protecting the Soil

The loss of land has become a serious worldwide problem. Protecting presently available land so that it will not be destroyed, to our nation, is more urgent and more important.

First, we should carry out biological measures as much as possible, i.e., planting trees, forestation, and planting grass on a large scale to build up soil vegetation. In arid regions or on mountain slopes, we should abandon cultivation and return the land for grazing, abandon cultivation to return the land for forestation, to restore or rebuild the natural ecological balance and stop soil erosion. In addition, we should suit measures to local conditions to develop diversification and reduce the pressure upon cultivated land. We must especially plant firewood forests on a large scale to solve the energy problem in farm villages and to avoid creating serious soil erosion by scrapping away the grassy vegetation. More organic fertilizers should be applied in farmland, stalks must be returned to the fields, wind breaking forest belts must be built to protect the farmland. There have been many successful cases in this regard. For example, the Xiadingjia Brigade in Shandong and the Jinsou Commune in Xiangxiang in Hunan have all suffered from the destruction of forests for reclamation and soil erosion. They exerted efforts to plant trees and build forests and realized "people nurturing the mountains (planting trees), the mountains nurturing the land, the land sustaining the people," thus they controlled soil erosion, realized prosperous forests and bumper harvests of food grains and emerged from poverty to become rich.

Second, we must develop the power of modern science and technology, use engineering means to change the natural conditions of local regions, rebuild the ecological environment favorable to mankind. One of the earlier and successful cases is the treatment of the Tennessee Valley in the 1930s in the United States. The Tennessee Valley was once a rich area, but unrefined cultivation and scouring by flood water caused it to lose its fertile surface soil and made it extremely infertile. The U.S. Government established a special agency to manage this piece of land. Dams were built on the river to store flood water and to use it to generate electricity and for irrigation. Scientific methods of cultivation were used, and finally, this infertile land became a rich oasis. After liberation, our nation also built many water conservancy projects. Most have produced benefits. But in recent years, because of uncontrolled felling of the forests upstream from the reservoirs, more and more serious silting of the reservoirs has been caused. It can be seen from this that in stopping soil erosion, engineering measures and biological measures must be carried out together and they must be closely coordinated before better results can be obtained.

Third, we must strengthen the treatment of the three wastes, prevent or reduce soil erosion by harmful substances. Some pollutants such as heavy metals and radioactive substances are very difficult to remove after they enter the soil, and they will continue to pollute and their pollution will gradually accumulate, therefore they cause permanent damage to the soil.

In addition, as mentioned previously, human activity is a major factor causing the loss of land. Therefore, human activity must be confined. This requires establishing laws to use laws to protect the land. For many years, China lacked a unified land management agency, and our nation did not have a special law to protect the land, therefore the use of land was in a state of anarchy. This situation has already made us pay a dear price. In future urban construction and construction of industrial and mining regions, we should avoid the broad procurement and whimsical use and wasting of land. Urban construction should be mainly involved with the rebuilding of old and dilapidated housing. We should stop building flat houses and low buildings of small capacity but occupy large areas of land. In farm villages, we should build houses on infertile land and sloped land, occupy less or not occupy cultivated land as much as possible. We should legally establish the amount and the plots of cultivated land by investigating land resources and by estimating population growth. These plots must not be occupied under any pretense. Those who willfully occupy land or cause a waste of land due to the dereliction of duty and cause pollution should be investigated as to responsibility and they should be made to compensate for the expenses needed to restore these pieces of land.

Scientific management and protection of land are a major task in China. They should be widely propagandized so that everyone will "regard land as precious as gold." Recently, our nation has established a land management agency. Land problems have been noted. But because soil protection is not only a problem of struggle between man and nature, it also involves everyone's activities, therefore there is a lot of work to do. In general, people are the masters of the land, therefore we must call upon everyone to love and protect the land of the motherland!

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WATER CONSERVANCY COMMISSION SET UP IN JILIN

OW190437 Beijing XINHUA Domestic Service in Chinese 0048 GMT 18 Oct 82

[Text] Changchun, 18 Oct (XINHUA)--With the approval of the State Council, the Ministry of Water Conservancy and Power set up the Songliao Water Conservancy Commission in Changchun Municipality, Jilin Province, on 11 October to take charge of unified planning, coordination and management of the water resources in China's northeast region (including the Hulin Buir Meng, the Hinggan Meng, the Jirem Meng and Ju Ud Meng in the eastern part of the Nei Monggol Autonomous Region).

Songhua Jiang and Liao He, the two major river systems in the northeast region, and other rivers on the international boundaries such as Heilong Jiang, Yalu Jiang, Tumen Jiang and Wusuli Jiang have very rich water resources. Rational development and utilization of these river resources is an important event bearing on economic construction and the people's livelihood in Liaoning, Jilin and Heilongjiang Province and the Nei Monggol Autonomous Region. Tremendous progress has been made in water conservancy construction in this region in the past 32 years since the founding of new China. However, because of the system of sectionally managing the rivers that had been put into practice by the provinces and the autonomous region over a long period of time, a scientific comprehensive plan for development and utilization of the water resources is still lacking; contradictions between the upper and lower reaches and among different departments existed in fighting for the control of the rivers, which, to a certain extent, affected the regional development of the water resources and the putting into full play of the beneficial results of the water conservancy projects built. With the establishment of the Songliao Water Conservancy Commission, we can make unified plans for unified management by proceeding from the overall situation and by following the law of nature and economic law to promote flood control, drainage, irrigation, water supply, power generation, water and soil conservation and the protection of water quality in the rivers in the northeast region; coordinate various areas and departments to control and develop the rivers and organize them to coordinate developing water conservancy and hydroelectric power generation well so that the rich water resources in this region will serve economic construction and the people's livelihood more efficiently.

CSO: 5000/4117

ACADEMY OF SCIENCES LAYS GROUNDWORK FOR MAJOR RIVER PLAIN DEVELOPMENT

Beijing RENMIN RIBAO in Chinese 17 Oct 82 p 3

[Article: "Management and Development of the Huang He, Huai He and Hai He Plains Becomes a Key Project in State Research--The Chinese Academy of Sciences Is Now Organizing To Draw Up Plans and Prepare Joint Efforts"]

[Text] Research work on the comprehensive management and development of the Huang He, Huai He and Hai He plains has been confirmed as a key state research project. The Chinese Academy of Sciences is now organizing scientists to draw up plans and prepare for joint undertakings.

From 24 to 28 September, the Chinese Academy of Sciences held a research conference in Beijing to study the Huang He, Huai He and Hai He plains. The more than 100 scientists representing 45 units both inside and outside of the Academy, and leaders and scientific management personnel from the provinces, regions and counties carried out repeated discussions based on actual conditions and suggested 12 areas for comprehensive management and development, the major ones are: assessment of the natural conditions for agriculture in the Huang He, Huai He and Hai He plains, the causes and forecasting of drought or flood, the prevention of salinization of the soil, the rational development and utilization of water resources, the ecological impact of diverting water from the south to the north, and preliminary research on management of the Huang He. It was decided at the conference to use remote sensing, systems engineering and other new techniques in the research work, to do 3 to 5 years of research starting now and to provide the state with a succession of achievements in scientific research and technical results for use in agricultural production. At the same time, they plan some long-term, practical results to be achieved in stages.

The Huang He, Huai He and Hai He plains that cover more than 300,000 square kilometers make up parts of, and in some cases the greater part of, Hebei, Shandong, Henan, Suzhou and Anhui provinces, including the cities of Beijing and Tianjin. The area has a large population, abundant resources and tremendous productive potential. It is not only a major agricultural area, it is also an area with tremendous significance in developing the national economy. The state is greatly concerned about the management of potential disasters such as drought, flood and the salinization of the soil

in the area of these plains. In the early 1950's, Xiong Yi [3574 3015], one of China's famous pedologists, and a group of scientific workers began research on the Huang He, Huai He and Hai He plains and on how to reduce erosion in the middle reaches of the Huang He and achieved some considerable results. At this conference, the experience and lessons of past work were summarized, achievements in scientific research were exchanged, and initial scientific plans and plans for next year were laid.

This July, the Chinese Academy of Sciences arranged for 20 scientific workers in related fields to go to four areas in the three provinces of Hebei, Henan and Shandong to carry out on-the-spot inspections, to review past research work done in experimental areas, to survey the situation regarding agricultural production and natural calamities and to get a handle on the key problems surrounding the development of scientific techniques. This was done in order to provide reference material and evidence to aid in making arrangements and establishing research priorities with regard to the work to be done in the Huang He, Huai He and Hai He plains.

The scientific research work on the Huang He, Huai He and Hai He plains is a comprehensive project involving the fields of agriculture, forestry, water conservancy, soil science, biology and geology and several departments and units. Lu Jiayi [4151 0857 6932], director of the Chinese Academy of Sciences, encouraged the scientific workers to select and prepare projects, to cooperate closely and to carry out joint undertakings in order to contribute to the tremendous goal of quadrupling the total annual value of our nation's industrial and agricultural output by the end of the century. Yang Jun [2799 3182], deputy director of the State Science Commission also spoke at the meeting.

9705

CSO: 5000/4109

REGULATIONS GOVERNING WATER, SOIL CONSERVATION PUBLISHED

Taiyuan SHANXI RIBAO in Chinese 8 Jul 82 pp 2, 3

[Article: "State Council Issues 'Regulations on Water and Soil Conservation Work'"]

[Text] Chapter I: General Principles

Article 1. Prevention and control of soil erosion and protection and rational utilization of water and soil resources are basic measures for changing the features of mountainous, hilly and windy regions, for controlling rivers, for reducing disasters due to flooding, draught and wind-drift sand, for establishing a good ecological environment and for expanding agricultural production, they are also an important aspect in land restoration. These regulations have been especially designated for the purpose of doing a good job of water and soil conservation work.

Article 2. The policies of water and soil conservation work are: Paying equal attention to prevention and control, combining control and management, adapting measures to local conditions, overall planning, comprehensive control and abolishing the harmful and promoting the beneficial.

Article 3. Water and soil conservation work for the nation as a whole is managed by the Ministry of Water Conservancy and Power. In addition, a national planning committee, a national economic committee and national water and soil conservation work coordinating groups in which the Agriculture, Animal Husbandry and Fishery Ministry and the Ministry of Forestry participate were established under the direction of the Ministry of Water Conservancy and Power in order to strengthen contacts between the relevant sectors, conduct periodic studies to solve major problems in water and soil conservation work and do a good job of water and soil conservation work. Regional people's governments at all levels that have the task of preventing and controlling soil erosion should establish the necessary water and soil conservation work organizations on the basis of concrete conditions.

The tasks of a water and soil conservation work organization are: Thoroughgoing implementation of principles, policies, and laws and decrees of the state relevant to water and soil conservation; carrying out

surveys of water and soil conservation and drawing up of plans and organizing the implementation of water and soil conservation; supervising and speeding up water and soil conservation work by the relevant sectors; organizing and developing scientific research, training and propaganda work relevant to water and soil conservation; and doing a good job of managing and using water and soil conservation funds and materials.

Each river basin organization should take responsibility for surveying, planning and scientific research work relating to water and soil conservation in their own basin and cooperating with and motivating the water and soil conservation work departments of the provinces, autonomous regions and municipalities under direct central government jurisdiction within the basin in doing a good job of water and soil conservation work.

Water and soil conservation stations, agricultural technology promotion stations, forestry stations, water conservancy stations, farm machinery stations, fertilizer stations and grasslands stations all have the responsibility of assisting local communes and brigades in doing a good job of water and soil conservation work.

Article 4. People's governments at all levels in mountainous, hilly and wind-drift regions must incorporate water and soil conservation work into their plans, strengthen their leadership, unify their plans, organize a coordinated effort, carry out propaganda and education and mobilize the masses to do a good job of this work. The water conservancy, agriculture, forestry, animal husbandry, farmland reclamation, environmental protection, railroads, communications, factory and mines, electric power and scientific research sectors must cooperate closely with each other and divide responsibility among them to do a good job of the water and soil conservation work that is relevant to their individual sectors. The propaganda and publishing sectors should develop propaganda work on water and soil conservation in a planned way in order to propagate scientific knowledge about water and soil conservation and to increase the knowledge of the cadres and masses about the harmfulness of soil erosion and the importance of water and soil conservation.

Article 5. Communes and brigades in agricultural villages and state farms, forestry centers and grazing lands should draw up concrete plans for water and soil conservation and organize means for their implementation under the guidance of the overall plan for water and soil conservation formulated by the local people's government and on the basis of local natural conditions and of the actual requirements of the masses in respect to production and livelihood.

Article 6. To prevent and control soil erosion, we must mobilize social forces and depend on the self-reliance of the masses. The state provides the required support in terms of funds and materials and should provide more assistance for key regions.

Planning sectors at all levels should incorporate water and soil conservation work into the annual plan for the national economy. The funds that the



state allocates for water and soil conservation should be used solely for that purpose and is not to be diverted to any other purpose. Water and soil conservation work departments and financial departments at all levels should strengthen their management of funds and pay attention to returns on investments.

## Chapter II. Prevention of Soil Erosion

Article 7. Opening up of wasteland and planting of agricultural crops is prohibited on land with a slope greater than 25 degrees. The people's governments of provinces, autonomous regions and municipalities under the direct jurisdiction of the central government can stipulate prohibition of development of slopes of less than 25 degrees on the basis of local geomorphology, soil, farming and population density, and other conditions.

Article 8. Opening up of wasteland, digging sand and cutting into mountains and blasting are prohibited in regions subject to severe wind damage, regions in which there is the danger of landslides, regions in which mud flows tend to occur, mountain slopes on the two sides of railroads, highways, rivers and irrigation ditches, the periphery of regions in which there are reservoirs and flooding, in nature preserves, scenic regions and regions in which there are historical sites and historical and cultural legacies.

Article 9. Opening up of wasteland is prohibited in loess hill and gully regions and plateau gully regions of loess plateau regions. The relevant provinces and autonomous regions should stipulate the areas in which reclamation is prohibited on the basis of concrete conditions.

Article 10. Opening up of wasteland by destruction of forests or by burning mountains and opening up of wasteland on grazing slopes and grazing land are strictly prohibited.

Article 11. In order to open up wasteland on sloping land with a slope less than that for which reclamation is prohibited, any unit or individual must obtain the approval of the provincial level people's government and must adopt measures for soil and water conservation. If this stipulation is not obeyed, an order will be issued to withdraw from cultivation, afforestation and planting of grass.

In order for a state farm to open wasteland on sloping land with a slope less than that for which reclamation is prohibited, it must be approved in accordance with the relevant state stipulations. The approved plan for opening up the wasteland must include a program for implementing water and soil conservation. Before the plan has been approved, the opinions of the water and soil conservation work departments concerning the implementation program must be sought. After approval, implementation is supervised by the water and soil conservation departments.

Article 12. Destroying water and soil conservation by cutting forests is strictly prohibited. All plans for cutting forests according to state

stipulations must include, in the approved cutting plan, implementation programs for replacement of the cut sites and for preventing soil erosion. Before the cutting plan is approved, the opinions of the water and soil conservation departments concerning the implementation program must be sought. After approval, implementation is supervised by the water and soil conservation departments.

Article 13. In order to prepare soil for cultivation and plant forests on sloping land, to remove grass from young forests and to reclaim economic forests such as tea-oil trees and tung trees, water and soil conservation measures must be adapted to prevent soil erosion.

Article 14. When water conservancy, railroad, communications, factory and mine and electric power sectors engage in construction projects and production in mountainous regions, hilly regions and wind-drift regions, destruction of the terrain and plant cover must be kept to a minimum. Extraction of soil, rocks and sand can bring about soil erosion and water and soil conservation measures must be taken. Discarded soil, rock, sand and slag and tail must be disposed of suitably and must not be allowed to enter rivers and reservoirs. When a project has been completed, it is the responsibility of the unit in charge of construction to take plant measures and the necessary engineering measures to protect water and soil resources on the bare land in the area of soil removal and excavation.

Each department must include an implementation program for preventing and controlling soil erosion in the submitted project plan design and production plan. Before the plan is approved, the opinion of the water and soil conservation department concerning the implementation program must be sought. After approval, implementation is supervised by the water and soil conservation department. Soil erosion that has already developed must be treated within a prescribed period. The funds required for treating soil erosion are to be disbursed by the capital construction unit from the capital construction investment and by the production enterprise unit from the enterprise's renovation and transformation fund or from its production development fund.

Article 15. In mountainous regions, hilly regions and wind-drift regions, the county-level people's governments, on the basis of local conditions, should organize rural communes and brigades and state farms, forests and grazing lands to carry out in a planned way the sealing of mountain passes and sand-fixation, planting of forests and grass, rotation of grazing, active development of fuel forests and forage grass and green manure plants, changing such customs as shoveling sod, digging out tree stumps, indiscriminate collection of firewood and indiscriminate grazing and preserving the plant cover.

Article 16. In mountainous regions, hilly regions and wind-drift regions, the county level people's governments must formulate concrete methods integrating the requirements of production planning and water and soil conservation in regard to such sideline production as growing medicinal

materials, raising silkworm eggs, growing edible fungi and mushrooms, burning charcoal, firing bricks and tile, mining ores and quarrying rock that are engaged in by rural communes and brigades, state farms, forests and grazing lands and individuals. These methods should be carried out in an organized and guided way to prevent indiscriminate excavation of soil and rock, destruction of plant cover and creation of soil erosion.

### Chapter III. Control of Soil Erosion

Article 17. Control of soil erosion in mountainous regions and hilly regions should be carried out on the basis of local conditions with small basins as the units. Efficiency should be strived for by carrying out overall planning, comprehensive control, concentrated control, continuous control, integration of plant measures and engineering measures, integration of slope surface control and ditch control, integration of measures for field engineering and for water storage, soil conservation and cultivation, integration of control and utilization of production and integration of present interests with long-term interests.

Article 18. Current cultivated land on slopes on gradients greater than that at which reclamation is prohibited should be dealt with individually on the basis of differing conditions. Communes and brigades with a small number of people and large land area should take positive steps in establishing cultivated land on flat land and gentle slopes, to increase yield per unit area and to withdraw slopes from cultivation and plant trees and grass on them. Communes and brigades with a large number of people and small land area for which withdrawal of land from cultivation would be difficult should build terraced fields or take other water and soil conservation measures within a stipulated time limit on the basis of the magnitude of the gradient. In the case of current cultivated land on slopes with gradients less than that at which reclamation is prohibited, such water and soil conservation measures should be taken as contour tilling, contour furrow planting, rotation of grass and farm fields and terraced fields in order to prevent soil erosion.

Article 19. Local people's governments should join in carrying out an agricultural production responsibility system, adapt it to local conditions, adopt suitable methods and organize the forces of the commune and brigade masses in order to carry out the task of controlling soil erosion. Communes and brigades with large soil erosion control tasks must cooperate to control it and should implement the principles of voluntary participation and mutual benefit, exchange at equal value and equitable work loads. The tasks of management, distribution of profits and use of new farming land after control should be agreed upon in common by the units that participate in control. There is no change in the rights of ownership to the original land.

Article 20. Rural communes and brigades and concerned units should actively establish the required nurseries and seed bases for the tree, grass and nursery stock seeds required in control.

Article 21. Any unit or individual that creates soil erosion as the result of opening up wasteland, engaging in sideline enterprises, digging minerals, building roads, constructing water conservancy or hydroelectric facilities, cutting forests or other production or construction activities should bear the responsibility for its control. The local people's government has the authority to supervise, speed up and inspect so that control can be effected within a time limit.

Article 22. Each region must implement a system of management responsibility for water and soil conservation facilities (including engineering and planting grass), strengthen the management of conservation, extend benefits and fully develop the role of water and soil conservation.

Rural communes and brigades should implement a system of responsibility for the management of conservation on the basis of the conditions of their water and soil conservation facilities. It is also possible to draw up management of conservation pacts and establish the necessary management of conservation organization for some water and soil conservation facilities. Such sectors as water conservancy, railroads, communications and factories and mines and state farms, forests and grazing lands should establish management of conservation organizations or assign specialized persons to manage conservation for the water and soil conservation facilities within their jurisdictions.

Article 23. No unit or individual may occupy or destroy water and soil conservation facilities, experimental sites, instruments or equipment.

Article 24. In the wind-drift regions of eastern, northern and northwestern China, local people's governments should, under integrated state planning, organize rural communes and brigades and state farms, forests and grazing lands to plant windbreak forests and to plant concentrated continuous strips of grass in order to break the wind and fix the sand. In other wind-drift regions, the local people's governments should adopt effective measures in a planned way in order to control damage due to wind-drift sand.

Article 25. In the cases of grasslands, grassy mountains and grassy slopes that are being converted to desert and being reduced, adjustment should be made in a planned way of the number of livestock the land can bear on the basis of the capacity of the grassland to bear livestock, land used for grazing should be rotated, forage grass should be planted, windbreak forests should be planted, the plant cover should be restored and the grazing land should be improved. In regions in which there is severe soil erosion, active steps should be taken to expand artificial planting of forage grass, encourage raising in pens and change the custom of putting livestock out to pasture in open country in order to restore plant cover.

Article 26. In regions in which there are the practice of crop rotation from area to area and slash-and-burn cultivation, the local people's governments should intensify propaganda and education, provide assistance in

building basic farming fields and promote agricultural science and technology to create the conditions in various aspects for gradual change in farming practice for the benefit of conserving water and soil.

Sloping land that has been allowed to lay fallow should be planted without delay with forage grass or green manure plants in order to increase the ground plant cover.

#### Chapter IV: Education and Scientific Research

Article 27. The education, water conservancy, agriculture and forestry departments should establish specialized courses or curricula on water and soil conservation in institutions of higher learning. In provinces and autonomous regions in which there is severe soil erosion, secondary level water and soil conservation schools can be set up, or specialized courses or curricula in water and soil conservation can be established in technical secondary schools of water conservancy, agriculture and forestry so that a great effort can be made to train scientific and technical personnel in the field of water and soil conservation. Relevant courses in the middle and elementary schools should also contain material on water and soil conservation.

Article 28. The Chinese Academy of Sciences, scientific research departments in water conservancy, agriculture and forestry and water and soil conservation work departments and river basin organizations in provinces, autonomous regions and municipalities directly under the jurisdiction of the central government should strengthen their leadership of scientific research units involved in water and soil conservation, conscientiously expand scientific research on water and soil conservation and summarize and propagate the results of scientific research on water and soil conservation without delay.

Scientific research work on water and soil conservation must be closely integrated with practice and must be in the service of preventing and controlling soil erosion and expanding production. At the same time that emphasis is given to studying applied techniques of water and soil conservation, research on basic theory and on relevant socioeconomic aspects should also be intensified in order to provide a scientific foundation for preventing and controlling soil erosion.

#### Chapter V: Rewards and Punishments

Article 29. Units and individuals who have made the advanced achievements indicated below should be given commendations and awards by all levels of the people's government in accordance with the magnitude of their achievements.

(1) Those who have made outstanding achievements in preventing soil erosion or in managing and maintaining water and soil conservation facilities.

(2) Those who have persisted in controlling soil erosion and have achieved rapid, high-quality conservation of water and soil and economic benefits.

(3) Those who have made outstanding achievements in actively changing the practice of extensive cultivation and in conserving water and soil and expanding production in agriculture, forestry and animal husbandry.

(4) Those who have been responsible for inventions, creations, innovations and other major contributions in respect to water and soil conservation science and technology.

(5) Those who have made outstanding accomplishments in scientific research, education, propaganda and popularization and management work in the field of water and soil conservation.

(6) Those who have made achievements by resolutely struggling against acts of destruction against water and soil conservation.

(7) Those who have demonstrated outstanding love for their work in engaging in water and soil conservation work at the grass roots level for 15 years or longer.

Article 30. Units and individuals that violate these regulations and who engage in the acts listed below should bear responsibility for compensation for losses. Disciplinary sanctions should be taken against the leading cadre in units that cause trouble or against the troublemaker. Criminal responsibility will be sought for those who violate the law.

(1) Those who violate the stipulations of Articles 7, 8, 9, 10 and 11 and who open up wasteland or who refuse to take water and soil conservation measures when opening up wasteland on slopes on which reclamation is permitted with the result that serious consequences occur.

(2) Those who violate the stipulations of Articles 12 and 13 and who refuse to carry out renewal of slashed areas or to adopt measures for preventing soil erosion with the result that severe soil erosion occurs.

(3) Those who violate the stipulations of Article 14 and who refuse to take water and soil conservation measures with the result that there is damage due to soil erosion.

(4) Those engaging in sideline production who indiscriminately excavate soil and rock or destroy the plant cover with the result that damage due to soil erosion occurs.

(5) Those who violate the stipulations of Article 23 and who encroach upon or destroy water and soil conservation facilities and water and soil conservation experimental stations or instruments and equipment.

Article 31. Any unit or individual that engages in acts violating these regulations has the right to be accused and charged. Any unit or individual that has been accused and charged cannot be attacked or retaliated against and violators are to be punished according to the law.

Chapter VI. Supplementary Articles

Article 32. People's governments at the provincial level, of autonomous regions and of municipalities under direct jurisdiction of the central government can formulate detailed rules and regulation for implementation on the basis of these regulations.

Article 33. These regulations are in effect from the date of their issue.

10019

CSO: 5000/4063

MA WENRUI ADDRESSES SHAANXI CONSERVATION MEETING

HK270615 Xian Shaanxi Provincial Service in Mandarin 0500 GMT 27 Jan 83

[Text] The Shaanxi Provincial Conference on Water and Soil Conservation which concluded on 26 January put forward specific demands for creating a new situation in this work in the province. Provincial CPC Committee First Secretary Ma Wenrui and Secretary Xie Huaide spoke at the meeting.

The conference pointed out: Shaanxi has scored great success in water and soil conservation work over many years. The area under irrigation has now reached 20 million mu, and over 11 million mu of farmland of 4 types have been built. Soil erosion has been controlled over an area of 35,000 square kilometers. This has played a very big part in increasing agricultural production.

However, viewing the province as a whole, most places are dry and it is not possible to guarantee stable and high yields in agriculture. Therefore, while continuing to get a good grasp of completing eight large water conservation projects, it is essential to rely on the masses to carry out small-scale water conservation construction. The province should rely mainly on biological measures for water and soil conservation. In particular, North Shaanxi must plant grass extensively.

The conference demanded that the province quickly change the passive situation of slow progress and serious damage in water and soil conservation work in recent years, and solve the problem of three changes: 1) Change water and soil conservation from simply serving grain production to also serving diversification, industry, and the people in urban and rural areas; 2) change from simply grasping farmland water conservation construction to simultaneously tackling water and soil conservation and improving the vegetation cover; 3) change the focus in water and soil conservation work to management.

The conference stressed: The key to reforming the water conservation management setup lies in contracting responsibilities. State-owned irrigation areas must establish economic responsibility systems and put them on a sound basis. Channels, reservoirs, ponds, wells, pumping stations and other installations managed by communes and brigades should be contracted out wherever possible. Water and soil conservation work can be carried out in a unified way by the collective, and also by peasant households undertaking contracted responsibilities. We can also contract a strip of land or small gully to the peasants to harness and use. We should apply policies to mobilize the masses' enthusiasm and speed up the harnessing of the land and water.

CSO: 5000/4129



CONFERENCE ON WATER AND SOIL CONSERVATION SELECTS KEY IMPROVEMENT SITES

Beijing RENMIN RIBAO in Chinese 24 Aug 82 p 2

["Soil Conservation Is an Important Measure To Control Rivers, the Nation's Fourth Soil Conservation Work Conference Closes, Eight Key Improvement Sites in Wuding He, Huangpuchuan and Sanchuan River in the Huiang He Valley Have Been Determined Within the Territory of the Whole Nation"]

[Text] The Fourth National Soil Conservation Work Conference that lasted for 6 1/2 days concluded in Beijing on the 22nd. Vice Premier of the State Council, Wan Li, told the delegates to the conference: Each locality must fully implement the "Regulations on Water and Soil Conservation Work" promulgated by the State Council, and each must insist on stopping activities that destroy water and soil resources.

Comrade Wan Li said, the key problems in doing soil conservation work well is to strengthen leadership. Each province, city and autonomous region must have a responsible cadre to concentrate on work of soil conservation, environmental protection and land restoration.

Comrade Wan Li asked each locality to strengthen surveys and research, summarize experience and lessons, and draw up overall plans well. Each locality must improve those regions that most endanger the national economy and people's lives. Every province, city and autonomous region in the nation and every prefecture, every county and enterprise must have its own key improvement measures. Communes, production brigades and production teams should also have their own key measures.

Comrade Wan Li especially emphasized that those who destroy water and soil resources must be penalized. Those who create serious destruction must be investigated to clarify the leadership responsibility. Those who are models in managing soil conservation well must be praised and their example popularized.

This national soil conservation work conference held by the National Soil Conservation Work Coordination Group emphasized the discussion and study of the "Regulations on Water and Soil Conservation Work" to conscientiously prevent the problem of soil erosion. The conference believes soil conservation is the lifeline of building up the mountain regions, an important measure for harnessing rivers, and an important content for land restoration. It is a major task that will affect future generations.

To guide the whole nation's soil conservation work, the State Council has decided to establish a coordination group in May with the participation of the State Planning Commission, the State Economic Commission, the Ministry of Water Conservancy and Power, the Ministry of Agriculture, Animal Husbandry and Fishery, and the Ministry of Forestry. The leader of this group, Minister Qian Zhengying [6929 2973 5391], summarized the experience and lessons in water and soil conservation work over the past 30 years.

This conference also studied related policies, established measures, and determined eight key improvement sites throughout the nation. They are the Wuding He, Huangpuchuan, Sanchuan He in the Huang He Valley, Dingxi County in Gansu Province, Liu He in the Liao He Valley, Xingguo County in Jiangxi Province and the reservoir area of the main water conservancy project of Gezhouba on the Chang Jiang.

9296

CSO: 5000/4078

HEAD OF WATER CONSERVANCY DEPARTMENT COMMENTS ON CONSERVATION 'REGULATIONS'

Taiyuan SHANXI RIBAO in Chinese 18 Jul 82 p 2

[Interview with Gao Jincai [7559 2516 2624], Head of the water conservancy department, Shanxi Province: "Conscientiously Implement the 'Regulations', Do the Work of Preserving Water and Soil Well"]

[Text] Recently, the State Council promulgated the "Regulations on Water and Soil Conservation Work" (abbreviated 'regulations' in the following). A reporter of this paper interviewed Comrade Gao Jincai, head of the provincial water conservancy department concerning how our province can adapt to the new situation, better implement the 'regulations', and carry out our province's work to conserve water and soil.

[Question] What is the important significance of the 'regulations' promulgated by the State Council?

[Answer] The 'regulations' promulgated by the State Council are laws that recognize the social character of conserving water and soil. They are the development and the perfection of the "Temporary Guidelines for Conserving Water and Soil in the People's Republic of China" promulgated in 1957, and reflect the new requirements of conserving water and soil during the new historical period of the nation. The "regulations" have given the work of conserving water and soil a very important role in building the four modernizations. They point out that the conservation of water and soil is a fundamental measure to establish a good ecological environment and to develop agricultural production, and it is an important aspect of land restoration. They have shattered the unilateral understanding of the past which held that conservation of water and soil was the work of the mountain regions and the water and soil conservation departments alone. The whole society has clearly understood that conservation of water and soil is closely related to many sectors and industries of the national economy. Water and soil conservation work has thus been placed under the supervision of the whole people and the nation and this is helpful to the healthy development of this cause.

[Question] Which tasks should be done well first in implementing the "regulations"?

[Answer] The "regulations" are the criteria for all activities in the future development of water and soil conservation. We must do things firmly according to the spirit of the "regulations." Therefore, we must vigorously propagandize and conscientiously study them so that they are known to all, so that the nation's cadres, workers, farmers, and intellectuals can truly and ideologically understand the importance of doing water and soil conservation work well in building the four modernizations. At present, there are many people who still do not understand the nature and meaning of water and soil conservation and the relationship it has with our personal life, some people do not even know what water and soil conservation is. After promulgating the "regulations", we should propagandize and educate all the people in water and soil conservation on a large scale.

[Question] Under the new situation, and according to the spirit of the "regulations", what are the key points that our province's water and soil conservation work should emphasize.

[Answer] According to the spirit of the "regulations", we must emphasize prevention, control and management. At present, some precipitous slopes are being reclaimed, the destruction of forests and grassland due to reclamation is serious. Many capital construction units and factories and mines have not paid attention to conserving water and soil well in the course of construction and production. The terrain and surface features are not taken into consideration. Rock, soil and industrial residue are directly dumped into the rivers. This not only causes new soil erosion, it also affects the ability of the river channels to drain flood water, in the future, this situation must be strictly prohibited. In control, small river valleys must be taken as the unit, and it must be centralized, comprehensive and continuous. This conforms to both natural and economic laws. When planning control measures, engineering and vegetation must be combined; increased production must be combined with blocking mud and immediate benefits must be combined with long-term benefits. We should serve local agriculture, forestry and livestock production through control. Therefore, we must combine capital construction of farmland, forestation, planting grassland, conserving soil, and tilling measures. We must develop a diversified economy to realize increased production, increased income and acquire wealth. While dredging, we must emphasize harnessing the upper reaches of reservoirs. In particular, we must hasten the harnessing of the upper reaches of the Sanchuan He, Guanting Reservoir, and Fenhe Reservoir. Because harnessing these key regions directly affects flood prevention and the use of water in the capital and in Taiyuan City. At present, heavy emphasis on control and neglect of management still exist. A necessary system to manage and maintain some facilities to preserve water and soil is lacking. In implementing the spirit of the "regulations", we must combine efforts with the agricultural responsibility system, and use various ways to carry out maintenance at the right places. In general, we must insist on protection, actively carry out control, strengthen management and maintenance, stop destruction, consolidate achievements, and expand results.

[Question] What problems should we pay attention to in future water and soil conservation work?

[Answer] According to the spirit of the "regulations", we must strengthen leadership. The people's government at each level must include water and soil conservation work in the daily agenda of important business, ideologically emphasize it, act with enthusiasm, implement forceful measures, and be persistent. In policy, we should continue to implement the principles of whoever controls benefits and whoever manages maintains, voluntary participation and mutual benefit, exchange of equal values, pay wages according to work and more income for more work. We should continue to purge the "leftist" ideological influence, and we should not engage in formalism and "raise a hue and cry." The communes and brigades with large areas to commune members to plant forests and grassland and to let them use the land for long periods.

2. We must suit measures to local conditions and provide guidance in different categories. Differences in natural conditions will necessarily be about variation in control measures. The different types of regions, geographic conditions, climate, and population density are large. Control work must be guided by category, there must not be arbitrary uniformity. The communes and brigades must have autonomy in deciding which measure will be the main one.

3. We must pay attention to economic results. The conservation of water and soil must be combined with production, we must take into consideration the short term, medium term and long term benefits, we must carry out control work that produces quick results, and we must pay attention to the utilization of science and technology and guarantee the quality of control. We must let the masses realize a gain for every effort they exert, and not do work that does not produce benefits.

4. We must implement various forms of the responsibility system in water and soil conservation, and rely on the self-reliance of communes and brigades in control. At present, state funds are limited, investment in water and soil conservation will not greatly increase within a short period. Efforts should be mainly carried out by the masses themselves self-reliantly and through hard struggles. After establishing the agricultural responsibility system, a lot of surplus labor emerged in the farm villages and this has created favorable conditions for water and soil conservation. The important task at present is to educate the farmers to correctly handle the relationship between production and construction and to guide them in accumulating labor, to establish a fixed amount of work in water and soil conservation each year, and actively improve productive conditions. As long as we conscientiously implement the various policies and guidelines issued since the Third Plenum, do the work according to the spirit of the "regulations", strengthen leadership, rely on the masses, and carry out work concretely, a new situation in water and soil conservation work will emerge.

9296

CSO: 5000/4070

SOIL EROSION IN GANSU SERIOUS, NEED FOR STRONG CONTROL MEASURES SEEN

Lanzhou GANSU RIBAO in Chinese 5 Aug 82 p 2

[Article by Sun Gui [1327 6311] and Yang Guoxiong [2799 0948 7160] of the Water and Soil Conservation Bureau, Provincial Water Conservancy Department: "Pay Attention to Water and Soil Conservation Work in Gansu's Chang Jiang Valley"]

[Text] The Chang Jiang Valley in Gansu is in the Longnan Mountain region bordering Xiqinling on the north, Shaanxi on the east, Sichuan in the south and bounded on the west by Diesshan which is the divide for the Bailong Jiang and Tao He. The administrative zone includes the 14 counties of the three prefectures (autonomous prefectures) of Wudu, Tianshui and Gannan. The total area covers over 38,000 square kilometers. There are grasslands and forests, the region produces an abundance of subtropical forest sideline and handicraft products, and hydraulic resources. But for a long period, because of the destruction of forests for reclamation, the forest line has receded, the function of the forests to nurture water sources has weakened and soil erosion is serious.

Landslips are increasing, and the damage from mud and rock flow is serious, characteristics of soil erosion here. In recent years, there have been more landslips along the banks of Bailong Jiang and its tributary, the Min Jiang, holding up traffic and destroying good farmland. There was a landslide in the mountain at the Xieliu slope in Zhouqu County on 9 April 1981. The landslide was about 1,700 meters long and about 300 to 350 meters wide, the area of the slide reached over 510,000 square meters. The amount of earth and rock that slipped amounted to about 25 million cubic meters, cutting off the flow of Bailong Jiang. The seat of Zhouqu County upstream and the seat of Wudu County downstream were both seriously threatened. The continued occurrence of these landslips has provided the solid material for the development of mud and rock flows. Because the slopes in the valley are precipitous, the specific fall of the river bed is large, mud and rock flows quickly occur during torrential rains following continuous overcast and rain, and they directly flow toward the mouth of the river channels forming an alluvial fan over a large area at the mouth of the valley of the channels. In the Bailong Jiang Valley alone, the fan is larger than half a square kilometer in area, and there are over 390 streams of mud and rock flow of definite danger in the valley. They have seriously damaged local industrial and agricultural production and disrupted traffic and transportation.

In addition, large area felling and destruction of forests have caused ecological imbalance leading to soil erosion. In recent years, the three major forest regions in the river valleys of Bailong Jiang, Kangnan and Xiaolongshan have been severely destroyed. The area is becoming smaller day by day and in the Bailong Jiang Forest Region alone, the area of indiscriminate felling and destruction of forests has reached over 430,000 mu. The forest area in other secondary forest regions has been reduced since the beginning of liberation to varying degrees. According to incomplete statistics, the forest area in Kangxian, Wudu and Wenxian has decreased by over 1.66 million mu since the beginning of liberation. Data of the provincial Wudu Hydrological Station showed that the annual content of sand in the largest section of Bailong Jiang from 1958 to 1969 averaged 298.7 kilograms per cubic meter per year. The average reached 464.9 kilograms from 1970 to 1979. The last 10 years showed an increase of 55.6 percent over the previous 10 years.

It can be seen that soil erosion in Gansu's Chang Jiang Valley is very serious, and is becoming worse. It is very important to preserve the soil and water in this area.

To preserve water and soil in Gansu's Chang Jiang Valley well, we believe the following should be emphasized:

I. We should plant forests and grasslands on a large scale and restore the ecological balance. We must first pay equal attention to both control and protection, put an end to controlling and destroying at the same time, strengthen laws, be determined to stop the unhealthy trends of indiscriminate felling, destruction of forests and grassland for reclamation, and the wanton destruction of water and soil conservation. We should firmly protect the measures to conserve water, soil, forests and grassland that are now available or that are being established. We should appropriately withdraw from some cultivated slopelands and return the lands for forestation and for grazing. Second, we must utilize the ability of natural renewal of trees and grass and take vigorous action to close the mountains to cultivate forests and close the slopes to cultivate grass in some areas suitable for forestation and on lands left by scorching and felling. Third, in the selection and the planting of trees, we must first develop water and soil conservation forests, firewood forests, and then gradually develop timber forests. We must use country land to plant trees as much as possible and combine trees, shrubs and grass, plant grass and shrubs first, and establish a multiple layer structure to cultivate forests and conserve the soil.

II. We should separately guide the work in different areas of erosion. In areas of intense or extremely intense erosion where mud and rock flows are developed, we should use different measures for different sections according to the development of mud and rock flows and the economic conditions of communes and brigades: In sections where mud and rocks are formed, we should actively build terrace fields, horizontal ditches (tables), plant trees and grass, restore and increase vegetation. In sections where mud and rock flows pass

through, we should build rock filled dams according to the conditions and the possibilities to weaken the degree of damage of mud and rock flows. In regions of mud and rock accumulation, we must combine efforts to reform the alluvial fan, deepen the river bed, enlarge longitudinal slopes so that mud and rock flows can be discharged without hindrance, and we should build rock ridged terrace fields in the alluvial fan, and plant a protective zone of trees and grass.

III. We should actively develop the comprehensive control of small river valleys. River valleys are the regions of natural confluence of ground surface water and underground water, and are the main areas and channels to transport runoff, mud and sand. To develop comprehensive control of small river valleys, we must develop an overall plan according to the characteristics of erosion of the mountains, slopes, of soil in the channels within the small river valley and the demands of agriculture, forestry, livestock production upon the soil. We must prepare an overall plan and set up facilities to prevent damage. Engineering structures and biological and agricultural measures should be rationally distributed to establish a comprehensive prevention and control system of various measures, and to control soil erosion in steps so that agriculture and livestock production in the river valley can develop on an overall basis.

IV. We should establish soil and water conservation agencies and make them sound. It is suggested that our province's Chang Jiang Valley establish a leading water and soil conservation and coordination group to carry out a joint battle consisting of many departments and many sectors under the unified leadership of the party and administrative authorities at each level so that agriculture, forestry, water, livestock production can coordinate efforts in control, and so that the political and legal agencies, industry and mines, transportation and urban development departments can cooperate closely. Only in this way can destruction be effectively stopped and the river valleys controlled so that water and soil conservation in our province's Chang Jiang Valley can be done well.

9296

CSO: 5000/4070



MANAGING SMALL RIVER BASINS WELL KEY TO WATER, SOIL CONSERVATION

Lanzhou GANSU RIBAO in Chinese 28 Jul 82 p 2

[Article by the Water Conservation Bureau of the Provincial Water Conservancy Department: "Widespread Propaganda, Good Maintenance, Management of Expanses, the Provincial Water Conservancy Department Holds Water Conservation Work Discussion Meeting To Learn Water Conservation Regulations"]

[Text] Recently, the provincial water conservancy department held a water and soil conservation work discussion meeting attended by water conservation department chiefs of each locality (prefectures, cities) in regions of serious soil erosion to learn and discuss the "Regulations on Water and Soil Conservation Work" recently promulgated by the State Council. The department proposed that the following three aspects must be stressed in Gansu's current water and soil conservation work.

1) We should propagandize the "Regulations on Water and Soil Conservation Work" widely and in depth to solve the problem of understanding. Copies of the "Regulations on Water and Soil Conservation Work" will be printed and issued to the production teams and posted widely to increase the understanding of water conservation work by the cadres and the masses. 2) We should strengthen prevention and maintenance work, and adopt effective measures to stop the destruction of forests and grassland. We should establish and make sound the economic responsibility system in water and soil conservation. We should protect presently available forests, grasslands, barren lands well, and fortify and improve the results of current management. 3) We should take the small river basin as the unit, implement comprehensive, centralized and continuous management. We must take the management of small river basins as the key in water and soil conservation work and manage them well. We should continue to manage and to conduct the general survey of small river basins well, understand the situation, summarize experience, find existing problems, propose solutions, establish models, fan out from point to area, and push the development of water and soil conservation work forward.

9296

CSO: 5000/4075

## WAYS TO CONTROL SOIL EROSION PROPOSED

Taiyuan SHANXI RIBAO in Chinese 21 Aug 82 p 2

[Article by Duan Zhonghong [3008 1813 7703]: "The Problems of Loess Plateau Should be Tackled in a Comprehensive Way"]

[Text] Shanxi Province is situated in the middle reaches of the Huang He and its western loess hilly region is a disaster area where soil erosion is serious. This is also an important strategic area for managing the Huang He. This is an area which roughly includes the following counties: Xiangning, Jixian, Daning, Yonghe, Xixian, Puxian, Shilou, Liulin, Zhongyang, Lishi, Fangshan, Linxian, Xingxian, Baode, Hegu, and Pianxian. It covers an area of more than 24,500 square kilometers. Here, the soil is crumbling with little plant cover, soil erosion is a serious problem. Since the founding of the nation, a large amount of work was carried out by the engineering and technical personnel of the concerned departments under the leadership and concern of the party and government so that the Huang He may flow peacefully.

However, our way of treating the loess plateau has not been effective. There are still 1.6 billion tons of mud and sand washed into the Huang He every year. About 300 million tons of mud and sand enter the Huang He as it flows through this province. This figure is quite astonishing. Therefore, the river bed in the lower course of the Huang He rises higher and higher year after year. A vicious cycle ensues: the protective river banks were raised higher as the situation worsened, and the situation became worse as the protective river banks were raised. Based on the present situation, a scientist estimated that the Huang He banks must be raised once every 10 years. He also stated that there is a limit to which the river banks may be raised; it cannot be raised continuously. Unless we treat the problem of soil erosion at its root, we will pay a severe penalty.

Why can we not succeed in water conservation? The lessons we must learn include 1) Ideologically, water conservation has been ignored. Under the influence of the "leftist" ideology we overemphasized production of food. The leaders at each level and the village cadres at the lowest level held that "food is the real task and water conservation is only a directive," and "if food production is not increased, you have not done your duty toward your county no matter how well you may have done the water conservation

work." That is why in those areas where soil erosion is a serious problem people kept cultivating the land instead of planting trees. They kept up cultivating crops extensively with little yield. If the loess plateau is "cultivated extensively" soil erosion will be the unavoidable result. Some of the teams went so far as to put aside water conservation for food crop production by destroying the existing forest and grass land. 2) On the side of policy, soil conservation was not emphasized consistently and managed comprehensively. The core construction work was overemphasized and traditional auxiliary construction work was neglected. Constructing dams and sand arresters or building and maintaining terraced fields are certainly important, but traditional experiences are also important.

Before the "cultural revolution" we were able to control the loss of soil to the Huang He using traditional methods with good results. Later, the traditional methods were lost, as a result, large construction projects offset the effect of controlling soil erosion and the loss of soil to the Huang He has not decreased appreciably. On matters related to biological measures, establishment of a stable ecological system through combination of tall trees, shrubs, and grasses was not pursued vigorously. Tall trees were preferred over bushes and grasses were completely neglected. Therefore, although a number of scattered areas may be covered with forest sand arresting and soil firming effects cannot be fully achieved, because there are no bushes under the trees and there are no grasses which protect the soil. That is why the masses observe and say: "A considerable amount of money is spent year after year on water conservation without success."

Summarizing the lessons learned from past experience, I would like to make the following suggestions.

1) In the future, in the loess plateau area, especially those areas where soil erosion is particularly severe, if they can do well the water and soil conservation work and achieve self-sufficiency of food, we must consider that they have contributed sufficiently to the nation. The government should exempt them from or reduce their government purchase duty and thus create the necessary conditions for returning these areas to forestry and animal husbandry from crop cultivation.

2) Establish a complete water and soil conservation system according to the local conditions. In implementing engineering projects, not only must the core construction work be emphasized, the traditional auxiliary engineering works must also be restored. The core construction work must be combined closely with the field management effort in order to form a complete engineering management system. In implementing biological measures, a balance between the tall trees, bushes, and grasses must be emphasized by correcting the past mistakes in order to form a complete water conservation forest system.

3) Multiple disciplines of science and technology must join forces to combat the problem. The past situation characterized by many authorities

each pursuing its own project without coordination with one another must be corrected. The correct way of doing thing is to have unified leadership and a unified plan. The comprehensive management experience gained by the 40 km Paomayan in Lishi County which may be described as "grass covers the ground, trees and bushes rubbing against your waist, oil crops grease your shoes, firm soil and clear streams" must be widely popularized. We must carry out on-site investigation and study of every river basin and every mountain one after another and draft a master plan which can be implemented in stages according to the local conditions. According to the master plan, forces from every side should be uniformly organized and the investment made by every unit must be spent uniformly, work steadily and make solid progress to keep on treating the problem effectively year after year.

4) The talent of technical personnel must be fully utilized. In order to encourage technical personnel to dedicate their lives to this important task, the needs of these areas must be preferentially guaranteed when cadres are assigned. Cadres already assigned to these areas should not be transferred out arbitrarily. Personnel policies beneficial to the cadres, policies which will make cadres work willingly in the mountainous region should be implemented in order to stop the flow of technical cadres from the mountain to the cities. The problems related to their dependents, their children's employment, their wages and salaries, housing and working conditions must be given a special attention and solved. In short, eliminate their troubles back at home. The concerned technical cadres must settle down in one place and be in charge of an area. He must sign a contract with the local government to undertake teaching, managing, and to carry out comprehensive management which is to be finished within a determined period of time. The technical personnel must actively conduct scientific research on the subject of water and soil conservation, and thus serve the nation by preventing soil erosion and promoting production.

9113

CSO: 5000/4101

WAY TO IMPROVE WATER, SOIL CONSERVATION, INCREASE BENEFITS

Taiyuan SHANXI RIBAO in Chinese 16 Jul 82 p 1

[Commentary: "New Ways To Manage Water and Soil Conservation"]

[Text] Jiuxian Commune, Hequ County, used the method of allowing specialized households contract to control small river basins. This mobilized the enthusiasm of the commune members to carry out water and soil conservation, and good results were realized. This experience tells us that in order to develop water and soil conservation persistently and with results, we must consider the personal benefits of the masses and develop this work by supporting the masses to develop diversification and to work to become rich.

Recently, the "Regulations on Water and Soil Conservation" promulgated by the State Council pointed out: "Local people's governments should join in carrying out an agricultural production responsibility system, adopt it to local conditions, adopt suitable methods and organize the forces of the communes and brigades masses in order to carry out the task of controlling soil erosion." Shanxi is situated in the loess plateau. Soil erosion is serious. It is an important reason for the long period of backward production and poverty of the masses at some localities. Conserving water and soil well is a major task that urgently needs to be done well. Now, water and soil conservation efforts of most of the counties, communes and brigades in the mountain regions of our province mainly rely on specialized teams. This is of course one way. But because most of the specialized teams must rely on state finances to carry out production, the benefits are not distributed directly to the masses, therefore the masses do not care. The method of contracting specialized households to control small river basins taken by Jiuxian Commune has remedied this shortcoming. This method suits the characteristics of decentralized management in most localities in the mountain regions and is beneficial to solving the problem of surplus labor, it has fully developed the productive potential, shortened the time of receiving benefits; it is favorable to commune members in developing diversification and in becoming rich quickly. It is also beneficial to the development of specialized production.

Carrying out comprehensive control of small river basins is the policy of water and soil conservation work over a fairly long period now and in the future. Therefore, the experience of Jiuxian Commune can be popularized at many places. When carrying out this work, we must pay attention to the following problems:

First, we should plan well, we must not be careless and blindly contract work to individuals. Second, we must sign contracts and guarantee results. When signing contracts, we must negotiate fully so that both the collective and the individual will benefit, and we must especially guarantee that commune members will receive benefits. Third, we must clearly regulate interplanting of forests and food crops. We must allow commune members to increase income under the prerequisite that water and soil conservation is not affected. We must insist on prohibiting the destruction of forests and grassland and reclamation of precipitous slopes. Fourth, we must keep conservation policies stable. The contracting period should be longer to encourage commune members to establish long-range plans and to actively maintain the fields and prepare the soil, plant forests and grassland, protect existing engineering projects, forests and grassland, and prevent monopolistic management.

The establishment and perfection of the production responsibility system have given impetus to water and soil conservation. As long as we adapt to the situation, strengthen leadership, continue to explore new ways, popularize new experience, a new situation will surely emerge in Shanxi's water and soil conservation work.

9296

CSO: 5000/4070

## SPECIALIZED HOUSEHOLDS CONTRACT TO CONTROL SMALL RIVER BASINS

Taiyuan SHANXI RIBAO in Chinese 16 Jul 82 p 1

[Article by Wang Wencai [3769 2429 2088] and Wang Ziliang [3769 5261 6852]:  
"The Method of Letting Specialized Households Contract the Work To Control  
Small River Basins Is Good, Commune Members Miao Hunman [5379 3236 4221]  
of the Jiuxian Commune in Hequ County Contract the Work To Dredge a Ditch  
Has Produced Results Shortly After a Year, This Year the Whole Commune Has  
Popularized This Experience"]

[Text] Jiuxian Commune of Hequ County contracted the task of controlling small river basins to specialized households. After 1 year of practice, the results were good. This year, another group of commune members took the initiative to contract the control of small river basins.

Jiuxian Commune carried out water and soil conservation in the past, but the results were not good. Last May, they were inspired by the agricultural production responsibility system and decided to let commune member Miao Hunman [5379 3236 4221] of the Xiaowu Brigade contract the work of dredging the Xinyao Ditch to carry out an experiment in controlling the small river basin. This ditch was 1 li long, the total area was 250 mu. Originally there were 24 mu of arable land and one tree. The bottom of the ditch gathered water that seeped up through the soil. The control plan involved building a dam to store water at the bottom of the ditch and to block flood water to silt the soil, to plant 2,500 trees of various types as timberwood and to plant 4,000 trees that will produce economic value on the slopes of the ditch. The plan was to be completed in 3 years and to realize a gain in 5 years. After 1 year Miao Hunman had already built four dams in the small river basin, one of which was a water storing dam. Thirty-five mu were leveled at the bottom of and on the banks of the ditch. The preliminary area of the barren slopes that were improved covered 140 mu (the two constituted 70 percent of the total area). Two mu were used for cultivating saplings and 55 mu as an economic forest, and 650 trees were planted at scattered places. The planting area increased from 24 mu to over 70 mu (interplanting of trees and food grain crops). This year, 23 mu have been planted with economic crops, including watermelon, hemp and herbs.

He also contracted to produce 3,600 jin of food grains and planned to produce 4,700 jin. According to estimates for a normal year, Miao Hunman and his family can receive an income of 3,000 yuan from the small river basin this year. At present, four workers of the family are working hard and are preparing to set up temporary living quarters in the ditch.

Miao Hunman's practice has enabled cadres of the commune and brigade to view the prospects in allowing specialized households to control small river basins. The communes also saw that contracting to control small river basins can increase income. This year, a large number of commune members have applied to control small river basins. The commune and each brigade quickly planned some ditches that have not been reclaimed and contracted work to selected commune members. The specific methods were: 1. The commune brigade uniformly planned and let the contracting household set the control standards, the task and the completion date. 2. The commune, the brigade and the household signed a three level contract. The collective was responsible for investment, mainly for purchasing the materials for capital construction (tree saplings, dynamite, diesel fuel), and the household was responsible for the work. 3. The newly prepared land and the trees planted belonged to the collective, the contractor household retained management rights and the right to receive a percentage of the benefits but it did not have the right to dispose of the land and products at will. 4. The management right of the small river basin was assigned to the contracting household for a long period. While guaranteeing that the results of control are not harmed, the management right was inheritable. 5. After realizing benefits, the principle that the collective keeps a smaller percentage and the individual is allowed to keep more was followed. The share of the benefits from the economic forest amounted to 30 percent for the collective and 70 percent for the family. The share of the benefits from the timber forest was 40 percent for the collective and 60 percent for the family. The food grains and economic crops planted on empty spaces belonged completely to the contracting household. If the contracting household abandons the work half way, it will be responsible for repaying 50 percent of total investment.

9296

CSO: 5000/4070



## WAN LI ADDRESSES TREE-PLANTING CONFERENCE

OW141155 Beijing XINHUA Domestic Service in Chinese 1237 GMT 12 Jan 83

[Text] Beijing, 12 Jan (XINHUA) -- "The all-people's voluntary tree-planting campaign must be conducted in a persevering and down-to-earth manner and we must not stop until we reach our goal."

Wan Li, acting premier of the State Council and chairman of the Central Greening Committee, made the above remarks at the all-people's voluntary tree-planting national work conference on the afternoon of 10 January.

Wan Li said: Initiated by Comrade Deng Xiaoping a year ago, the NPC adopted a resolution on unfolding the all-people's voluntary tree-planting campaign. The whole party, the whole army and all of the nation's people warmly supported this resolution and eagerly participated in voluntary tree planting. It is heartening to see the achievements scored in the past year. Recently, Comrade Deng Xiaoping again gave instructions on unfolding the all-people's voluntary tree-planting campaign. He called for doing a better and more concrete job in the coming years. The party committees and governments at various levels must do this important task well.

Wan Li stressed that it is necessary to further enhance the understanding of the campaign. He said: To make the motherland green and to protect its environment by planting trees and afforestation should become an important national policy of our country. We cannot properly run our country if we do not vigorously develop forestry and expand forest cover.

Wan Li continues: In the past, we have largely focused the people's propaganda education on voluntary tree planting on the level of perceptual knowledge. Although it has sometimes been raised to the high plane of building the two civilizations, it is still not sufficient. The all-people's voluntary tree-planting campaign is not solely an economic issue nor solely an issue of spiritual civilization. It is also an environmental issue which bears on the existence of mankind. The quality of the environment bears closely on man's existence and on his lifespan. He called for more propaganda on this aspect by the press, in radio and television broadcasting, films, books and magazines to enable to people to have a clearer understanding of the importance of maintaining the ecological balance by planting more trees, flowers and grasses, and by more self-consciously plunging into the afforestation and greening campaign. Only thus can the national voluntary tree-planting campaign be perpetuated.

Wan Li called for further strengthening organization and leadership over voluntary tree-planting work. In discussing this work, the Secretariat of the CPC Central Committee maintained that the party committees and governments at all levels must regard the work as a major event for serving the people. At the central level, Comrades Deng Xiaoping and Hu Yaobang personally took up the matter and solved some practical problems. The leading comrades of the party committees and the governments at all levels and the responsible persons of all units must lead the work in voluntarily planting trees, flowers and grasses and in developing forestry.

Wan Li expressed the hope that cities and towns must lead the voluntary tree-planting campaign. Because the leading organs are located in cities and towns, they must therefore set an exemplary role. Cities and towns, particularly the large and medium-size cities, must draw up greening plans and bring the plans into urban construction. The areas set out in the greening plans must not be used to build houses or for other purpose. Unauthorized occupation of land set out for greening in cities and towns and acts violating urban greening must be resolutely checked. It is necessary to make all available land green by planting trees, grasses, flowers or other vegetation so that, gradually, no barren ground will be left in the cities and that the urban environmental outlook will be fundamentally improved. We must work hard and strive to bring about a fundamental improvement in the environmental outlook of the cities by gardening and greening, and raise urban gardening and greening to a new higher level in the next 5 years.

To do a better job in the voluntary tree-planting campaign year by year, it is essential to strengthen the work of the greening committees at all levels. The greening committees must be sufficiently reinforced by appropriately increasing the number of young cadres and technical specialists. The governments in various localities must support voluntary tree planting and afforestation with funds. They can take a small sum of money from the various investments to help solve the funding problem. The money spent on voluntary tree planting and afforestation will pay off. From a long-term point of view, such spending is highly justified and the economic returns will be very high. The voluntary tree-planting campaign will be better conducted year by year if we arouse the ideology, strengthen the organizations and have sufficient technical guidance and fund support.

Wan Li added: We must conduct the all-people's voluntary tree-planting campaign in a down-to-earth manner and emphasize the practical results. In doing a solid job we must refrain from raising a short burst of wind, shouting propaganda and initiating a momentary campaign. Still less must we be in like a lion and out like a lamb. In doing a solid job we must arouse the ideology, strengthen organization and leadership and pay attention to the following:

1. It is necessary to draw up a proper plan. The planting of trees, flowers, grasses and other flora must be decided in light of the local soil, climate and environmental conditions. In every locality we must plan in advance the piece of land to be afforested first, and decide who is responsible for the afforestation work.
2. Nursery stock must be properly prepared. All localities must provide sufficient land for growing nursery stock.
3. Properly establish the responsibility system. In practicing the responsibility system we must have awards and punishments and must combine responsibility, rights and benefits. The responsibility system should apply to the state, collective, and individual, and to voluntary afforestation work. A management and protection responsibility system must be instituted for voluntary tree planting to ensure both the planting and growing of trees. We must not just pay attention to planting and not to growing.

The annual planting quota of three to five trees for each person must not be checked and accepted at the planting stage but must be counted according to the number of living trees. Thirty percent of the attention must focus on planting, while 70 percent should focus on management. If no practical responsibility system is established for management and protection, the results of voluntary tree planting will be seriously affected and the enthusiasm of the masses will be dampened.

4. It is necessary to have regular inspections and supervision. The greening committees must seriously fulfill their main tasks of promptly summarizing experiences, solving problems and making criticisms and commendations.

5. It is necessary to formulate rules and regulations. After adopting the resolution on all-people's voluntary tree planting by the NPC, the State Council "implementation measures" to ensure regular inspections. Various provinces, municipalities and autonomous regions, as well as counties, must formulate necessary rules and regulations and establish a system of awards and punishments and submit them to the local people's congresses for approval. Similar rules and conventions must also be formulated below the country level. Rules must be formulated governing cooperation in afforestation between the industrial and mining departments and the localities. Rules and regulations which benefit forestry development and the planting of trees, flowers and grasses must also be formulated. People who recklessly fell trees must be seriously punished. The unhealthy trend of indiscriminate logging must not only be fundamentally checked but completely stopped. The felling of trees on military bases must also be governed by relevant regulations.

In conclusion, Wan Li called on all the delegates to the all-people's voluntary tree-planting national work conference to promptly relay the guidelines of the conference after returning to their localities and to strive to score greater achievements in the voluntary tree-planting campaign in 1983.

The all-people's voluntary tree-planting national work conference opened on 5 January. The conference seriously summarized and exchanged the achievements and experiences gained in the past year in unfolding the all-people's voluntary tree-planting campaign. The conference also specifically studied and arranged work for this year. During the conference, all the delegates visited the all-army afforestation exhibition and the greening grounds on the barren hills of the Ming tombs and the wasteland of Nankou. The conference closed on 11 January.

CSO: 5000/4129

LI XIMING ADDRESSES TREE-PLANTING MEETING

OW101339 Beijing XINHUA Domestic Service in Chinese 0757 GMT 8 Jan 83

[Report by XINHUA reporter Zhou Yichang]

[Text] Beijing, 8 Jan (XINHUA)--At a national conference on the nationwide, obligatory tree-planting campaign, Li Ximing, vice chairman of the Central Greening Committee and minister of urban and rural construction and environmental protection, proposed that plans for tree-planting in urban and rural areas be included in the plan for urban and rural construction, so that tree-planting could be closely combined with urban and rural construction and environmental improvement.

He said: Unprecedented progress was made in afforestation throughout the country in 1982. According to incomplete statistics compiled by 236 cities, more than 95 million trees were obligatorily planted in the urban areas of those cities (exclusive of trees planted in their suburban areas), twice the total number of trees planted in 1981. People in those cities also planted grass on more than 2 million square meters of land and opened tree nurseries with a combined area of over 13,500 mu. Thus, Beijing, Wuxi, Zhengzhou, Guangzhou and some other cities have come to the fore as advanced cities in planting trees and making their areas green.

He said: This is the second year since we launched the nationwide obligatory tree-planting campaign. In order to achieve better results in obligatorily planting trees in urban and rural areas, all cities, towns and villages should do a good job in making plans for tree-planting, include such plans in their construction program and conscientiously carry them out. Overall planning for construction in 243 cities in the country is expected to be completed within this year, and overall planning for construction in country seats, towns and villages are generally to be completed within 3 years. All plans for urban and rural construction must include planning for tree-planting in order to simultaneously plant trees and carry out construction in other fields.

He pointed out: The general requirement for making cities green and garden-like is: In cities where conditions permit, 30 percent of the city area should be covered with green in the near future, averaging 3 to 5 square meters for every member of the urban population. Every effort should be made to cover the cities' bare areas with green by the end of this century, averaging 7 to 11 square meters for every member of the urban population.

He called for raising cities' greening to a new level in the next 5 years. Particularly in the three municipalities directly under the central government, the capitals of provinces (autonomous regions), famous historical and cultural cities and major scenic and tourist cities, vigorous efforts should be made to tackle "dirtiness, disorder and misconduct." It is necessary to bring about a fundamental turn for the better in the face and environment of those major cities by making them green and garden-like in the next 5 years. While making their environments clean and tidy, all factories, mines, enterprises, government offices, schools and other units should bring about a fundamental change for the better in greening their areas in the next 3 years.

He said: To do a good job in obligatorily planting trees in cities, it is important to effectively solve the problem of sapling supplies. At present, most tree nurseries in cities are too small, and continued efforts should be made to strengthen the building of such nurseries. At the same time, scientific research should be stepped up according to planning for tree-planting and horticulture, and a good job should be done in the introduction and adaptability of various grass, tree and flower strains. Good tree strains should be selected for planting. Various tree, grass and flower strains, which are in harmony with local conditions, should be bred in a planned way and planted in cities in order to make them look more beautiful. City greening committees, as well as urban construction and parks and forestry departments at various levels, should do their organizational work well and be effective advisers to the leading bodies concerned. A good job should be done in giving technical guidance and organizing the maintenance, protection and management of trees, lawns and flowers. It is necessary to institute and improve a responsibility system in such maintenance, protection and management and to combine maintenance and protection by the masses with those by professional teams. It is particularly necessary to mobilize and organize young people to participate in obligatory tree-planting and in the protection of trees in order to enable them to form a good habit of cherishing trees, grass and flowers.

He pointed out: Land scheduled for planting trees or grass should not be used for building houses or for other purposes.

He also pointed out: The problem of destroying trees happens not only in rural areas but also in cities at times. It is necessary to resolutely stop excessive tree felling. All cities, towns and villages, as well as the related departments, should lay down regulations and measures with rewards and penalties, concerning the maintenance, protection and management of parks and trees and carry them out to the letter.

CSO: 5000/4117

'RENMIN RIBAO' ON BUILDING NEW FUEL FORESTS

HK180131 Beijing RENMIN RIBAO in Chinese 13 Nov 82 p 2

[Commentator's article: "Take Early Steps To Build Fuel Forests"]

[Text] There is a severe shortage of fuel in our country's rural areas. There are 170 million peasant households throughout the country. On average, they lack firewood for 2 months every year and more than 47.7 percent of peasant households lack firewood for 3 months or so. This is a difficult problem in the peasants' daily lives. As a result, a large quantity of forest cover and bushes as well as plants, are often destroyed and most straw and dung is burned. This has aggravated the undermining of the natural and ecological balance. This is also a great obstacle to the expansion of the productive force in agriculture and the realization of agricultural modernization. We should solve this problem immediately.

Our country's rural areas cover a vast territory. To solve the fuel shortage problem it is impossible to rely only on the increase of commodities supplied by the state. We should instead mainly rely on the exploitation and utilization of energy resources in rural areas. In accordance with the principle of "suiting measures to local conditions, making use of various kinds of energy to supplement each other, promoting comprehensive utilization and attaching importance to practical results," we should build and utilize fuel forests, methane generating pits, small hydropower stations, small coalpits, solar energy, wind power, geothermal energy, tidal energy and so forth. Building fuel forests is one very effective method.

Firewood has always been an important fuel in rural areas, second only to straw as an energy source in the daily life of the rural areas. Our country has good natural conditions suitable for developing fuel forests. Apart from that, we have abundant forest resources. In the northern and southern parts of our country, we have many kinds of trees suitable for building fuel forests, which can grow rapidly and have a powerful ability for photosynthesis and sprouting. As long as we plant these trees carefully and cultivate and protect them conscientiously, we will, generally speaking, reap the benefits after 3 to 5 years. Every mu of fuel forest can produce more than one thousand to several thousand jin of dry firewood or, at least, 500 to 600 jin of firewood. If every person has 1 or 2 mu of fuel forests, generally speaking, the demand for firewood can be satisfied all year through. Fuel forests have a natural sprouting power. As long as we carry out good management work, once we plant them, we can benefit for several years and make use of them continuously. Through building fuel forests and planting other forests, many counties, communes and production brigades have gradually solved the problem of the shortage of fuel. For example, starting from 1965, Yanling County in Henan Province, which is located in a plain, has planted trees extensively. Every year, through pruning, it can get dry firewood totalling 150 million kilos. Most communes and production brigades have enough firewood.

There are some other examples which show the success in opening up energy resources. For instance, some people have planted cherry trees, locust trees and sorrel trees in the saline-alkali soil area in order to get firewood or planted willows in the desert to replace dung that can be used as fuel. All this shows that in plains, hills or some other places where the natural conditions are comparatively poor, it is absolutely possible to build fuel forests. These areas may solve their problem of lack of firewood by relying on their own efforts.

We can also achieve other economic returns in the process of building fuel forests. Many kinds of leaves are nutritious fodder and good quality green manure. When we have sufficient firewood, we can make use of more straw to produce marsh gas and spread them directly on the fields. This will be beneficial to restoring the fertility of cultivated land and promoting the development of agriculture and animal husbandry.

Various rural areas, those areas where there is a severe shortage of firewood in particular, should regard the building of fuel forests as their most important task in forestation. In the light of the new conditions which have developed since the extensive implementation of the responsibility system in production in the rural areas, they should formulate practical plans and follow the principle of "whoever plants the trees is entitled to get the firewood" to arouse the enthusiasm of communes, production brigades and individuals. The building of fuel forests may be managed and administered by the collectives and the distribution of firewood is based on the needs of peasant households. The fuel forests might also be built by the collectives, but managed and used by peasant households. Various kinds of contract systems might be implemented in this respect.

In the meantime, we may also allot barren hills (including wasteland and uncultivated sands) to commune members as private hills, to encourage and support them in planting more trees and grass to solve, for themselves, the problem of lack of firewood and wood. Forestry departments should grow fine saplings for building fuel forests, train key members to pass on knowledge of forestry and give more guidance for the application of the technology of forestation and growing saplings to promote the development of fuel forests. Various localities should take active measures to spread the experience of those typical units in forestation so as to encourage the broad masses of commune members to build more fuel forests.

Our research and study of our own forest resources is still lagging behind and more efforts should be exerted in order to catch up with advanced levels. At present, the emphasis of our research work should be placed on the selection, introduction and popularization of saplings which are suitable for building fuel forests and can grow rapidly, luxuriously and densely. We should also emphasize the management, felling, utilization and technical renewal of fuel forests to meet the demands of the masses for building fuel forests. Apart from that, old-style kitchen ranges in rural areas which burn firewood directly (their heat effect is 10 to 15 percent in general) waste a large quantity of energy. If we can take active measures to manufacture and popularize kitchen ranges which economize on firewood (their heat effect may reach 20 to 30 percent), this will also ease the strain on firewood.

The 12th CPC Congress has put forward the magnificent goal of "quadrupling the gross annual value of industrial and agricultural production" and regarded the settlement of the energy problem as one of the strategic focal points. The broad masses of rural cadres, commune members and forestry workers should rouse their spirits, take early measures to build fuel forests and open up energy resources for rural areas to make contributions to creating a new situation in the agricultural sphere.

CSO: 5000/4129

'RENMIN RIBAO' URGES HALT TO FOREST DESTRUCTION

HK010939 Beijing RENMIN RIBAO in Chinese 28 Oct 82 p 1

[Editorial: "The Responsibility for Halting the Destruction of Forests Lies With the Leadership"]

[Text] In the "Emergency Directive on Stopping the Destructive Felling of Trees", the CPC Central Committee and State Council sternly point out that the key to halting the destruction of forests lies in leadership, and "instructing party committees and people's governments of counties with forest areas to take responsibility for supervising the enforcement of forestry protection laws and regulations." They also say that failure to stop those who break the law and destroy forests constitutes dereliction of duty on the part of county party secretaries and county magistrates, who will be held responsible for their ineffective leadership by the party committee and government at the next level up. Therefore, leading party and government organs at various levels must resolutely implement this emergency directive, take immediate and effective measures to halt the destructive felling of trees within a stated time, and vigorously and speedily deal with all cases of forest destruction according to law.

Since the issuance of the "Emergency Circular Calling a Firm Halt to the Destructive Felling of Trees" by the State Council in December 1980, the situation has to a certain extent improved in our country, but this evil practice has still not yet been checked and recently has been gradually spreading. In some places, large areas of state-owned forests were seized and destroyed; tens of thousands of mu of collective-owned wooded land were divided up or all their trees felled; and some protective belts of trees and forests in some environmental protection areas were broken up. Some people even flagrantly robbed timber being processed, and cases of forest guards and patrolmen being beaten up occurred very frequently. Such a grave situation of anarchism and disregard of state laws should be immediately stopped.

The reasons for the failure to stop the destructive felling of trees in some places are many. But the primary one is the failure to eliminate the baneful influence of anarchism from the 10 years of internal disorder. On the pretext that certain problems concerning forestry management systems and policies have not yet been solved, that the contradiction between timber demand and supply is becoming bigger and that the masses of people living in the hills should become affluent as quickly as possible, some people say that the destructive felling of trees is unavoidable and even reasonable. Such ideas and viewpoints are absolutely wrong. The protection of forest areas and the development of forestry are the starting point and end result of our forestry policies. Some problems do exist in current forestry work and they demand solutions. We should actively create conditions to tackle these problems in a prepared and systematic way, but we should in no way connive at destructive tree felling using the pretext of imperfections in the forestry management system and certain problems concerning concrete policies. This runs absolutely contrary to the party's forestry policies and goes against the fundamental interests of the masses and state. Our leading party and government organs and all cadres who work for the interests of the masses of people should by no means concern themselves simply with the immediate interests of the masses and disregard long-term and fundamental issues. In helping the masses to increase their prosperity as soon as possible we must guide and educate them to do so through their own labor, but never by means of encroaching on, stealing or plundering state property.



We must keep a sober mind on such questions of principle so that we will be able to carry out thoroughly and correctly our party's principles and policies.

At present, leading cadres in many places lack an understanding of the seriousness of destructive tree felling. Some of them turn a deaf ear to the matter or stand aside without taking it seriously; some tolerate evil by turning big problems into small ones and small problems into no problem at all; some are indecisive about taking action and adopting effective measures; and some drag out important cases of destroying forests and even shield or connive with lawbreakers. The leadership in such a situation is in fact directly or indirectly aiding the development of such evil practices. The emergency directive of the CPC Central Committee and State Council points out that wherever the evil practice of destructive tree felling is not checked, this constitutes dereliction of duty on the part of the leaders there who will be held responsible for ineffective leadership. This is the crucial point of the issue. Party and government leaders at various levels must, in close coordination with public security organs, procuratorial organs and people's courts, seriously take responsibility for conducting an earnest study of the problems concerning destructive tree felling in the areas under their jurisdiction, and resolutely adopt effective measures to halt this evil practice. In handling important cases of destroying forests, those who violate the law, whether they are ordinary people or cadres, must be dealt with seriously. It is necessary to order all those guilty to compensate for the forests they have destroyed, to impose fines on them, or to mete out punishment in accordance with the degree of the destruction and with the law. None of those who violate discipline and law should be allowed to get off scott-free. Heavy blows must be inflicted on their ringleaders. Heavy punishments must also be imposed on forestry workers who steal what is entrusted to their care. Failure to act in accordance with law is tolerance of crime. We must resolutely protect the strictness of state laws. We must make the job of stopping the evil practice of destructive tree felling into a regular one. The broad masses of party members and cadres must be educated to implement earnestly the party's forestry principles and policies and to lead the masses to observe discipline and laws by their own exemplary behavior, thus waging a resolute struggle against all practices of destroying forests.

Stopping destructive tree felling and striking blows at the criminal activities of destroying forests reflects the vital interests and common aspirations of the broad masses. The emergency directive of the CPC Central Committee and State Council about stopping the destructive felling of trees must be extensively and thoroughly propagated and explained in all localities of the country so as to make it known to every household and every individual. Furthermore, it is necessary to arouse the vast numbers of cadres and masses, under the guidance of the spirit of the 12th party congress, to do their part in protecting forests and developing forestry.

#### CENTRAL ORGANS TO TRAIN CADRES IN ROTATION

OW140614 Beijing XINHUA Domestic Service in Chinese 0704 GMT 13 Oct 82

[Text] Beijing, 13 Oct (XINHUA) -- The CPC Central Committee and the State Council on 3 October made a decision on education for cadres of the central party and government organs. It stipulates that from now on all cadres of the central party and government organs should be trained in rotation. It calls on the central party and government organs to carry out education for cadres constantly, to regularize and institutionalize the training and strive to raise the political and vocational level of the cadres remarkably in 3 or 5 years to meet the needs of socialist modernization.

CSO: 5000/4129

PARTY, STATE ISSUE DIRECTIVE ON TREE FELLING

OW280802 Beijing XINHUA Domestic Service in Chinese 1424 GMT 27 Oct 82

[Text] Beijing, 27 Oct (XINHUA) -- Emergency directive of the CPC Central Committee and State Council concerning stopping the destructive felling of trees dated 20 October 1982:

The evil practice of destructive felling of trees prevails again in many places and is gradually spreading. The primary cause of the evil practice is the lack of understanding of the seriousness of destructive tree felling on the part of party and government leading organs and their failure to take effective measures to tackle the problem. Some party and government organs even shut their eyes and let the evil practice go unchecked. It is necessary to make comrades understand that problems such as additional funds for the tending of forests, effective felling plans and readjustment of purchasing and selling prices do exist in the current forestry work and that some of the problems have only been partially solved. The masses of people in the forest regions also face difficulties in their daily life. These problems need to be gradually solved in a prepared and systematic way and over a considerable period of time. However, in the face of the destructive tree felling, comrades should not disregard the law, or only enforce it casually, under the pretext of shortcomings in the work. Forestry law and regulations formulated by the state reflect the vital interests of the people of all nationalities in the country and are supported by the broad masses of the people. Those who violate the law and destroy forests are only a small minority. Connivance at the handful of violators is a crime against the people. Only by resolutely striking by the handful of violators can we effectively stop the evil practice and encourage more people to protect and develop forestry. Otherwise, trees which take a long time to grow will be destroyed at once, causing irredeemable losses. For this reason, an emergency directive is issued and reads as follows:

1. The CPC Central Committee and State Council instruct party committees and people's governments of counties having forest areas to take the responsibility of supervising the enforcement of forestry protection law and regulations. They are urged to take immediate and decisive measures to stop the destructive felling of trees within a stated time. It is imperative to investigate thoroughly and punish in accordance with the law any unit or individual who has seized and destroyed, with any means, state- or collectively-owned wooded and hilly lands. Failure to stop the violators is a dereliction of duty on the part of county party secretaries and county magistrates. They will be held responsible for their ineffective leadership by the party committee and government at the next higher level.

2. It is necessary to order any unit or individual that has destroyed forests to return the seized forests or compensate for them, to impose fines, or to mete out punishment in accordance with the degree of the destruction and with the law. Violators, no matter whether they are ordinary people or cadres at any level, must be punished equally and must not be connived at, shielded or protected under any pretext. Places where the evil practice is rampant must seize a few typical cases, severely handle them and publish

the results in newspapers so as to frighten criminals and educate the masses of cadres and people. The CPC Central Committee and State Council have decided to set up a work group consisting of the Central Commission for Discipline Inspection, the Ministry of Forestry and other departments concerned to assist some key provinces and autonomous regions to handle cases of destructive tree felling and correct some party and government leaders' failure to handle the cases.

3. It is necessary to speed up the work to stabilize the ownership of wooded and hilly areas, designate private hilly areas and introduce the responsibility system in forestry production. In places where the work has not been completed, felling of trees, except for the lumber production task under the state plan, should be temporarily stopped. In places where the work has been completed, it is necessary to strengthen forestry management, formulate general rules and regulations among villagers, and rigidly enforce the procedures for reviewing the application for and the issuing of licenses for felling and shipping trees. A license issued by forestry departments is needed in order to fell and ship trees and to sell lumber. Free markers of woods and bamboos in the forest regions and neighboring areas must be closed. At the same time, it is necessary to conscientiously solve disputes over wooded and hilly lands. Before a dispute is settled, neither side is allowed to obtain the ownership certificate and fell the trees in these disputed wooded and hilly areas. Any attempt to start a new dispute over the ownership is not allowed. Violators will be investigated and duly handled. In collectively-owned forests, it is necessary to implement the responsibility system for specialized jobs under contracts. The forests should not be equally divided up among individuals.

4. In view of the fact that to protect and develop forestry is a key issue in China's socialist construction, it is necessary to strengthen the protection and management of forests and efforts should not be slackened at anytime. From now on, it is necessary to immediately stop the evil practice of destructive tree felling once it occurs. Indecisiveness in handling cases of violation should not be allowed. Party committees and people's governments at various levels must immediately conduct an earnest inspection of the work to resolutely stop the evil practice of destructive tree felling, strengthen the management and protection of forests, and further carry out the forestry policy in order to map out specific arrangements for the existing problems and achieve good results in the work.

Party committees and people's governments in all provinces, municipalities and autonomous regions are required to submit a report to the party Central Committee and State Council before the end of this year.

CSO: 5000/4129

LEADERS RESPONSIBLE FOR STOPPING FOREST DAMAGE

HK190951 Shijiazhuang HEBEI RIBAO in Chinese 9 Jan 83 p 1

[Commentary: "The Key to Stopping Damaging Forests Lies in the Leadership"]

[Text] Since the "emergency directive on stopping denudation of forests" was issued by the CPC Central Committee and the State Council on 20 October 1982, various localities in our province have taken active measures to conscientiously implement it. The unhealthy tendency of denudation has now been checked and controlled in most areas. However, it still remains unchecked in a few areas. The state-owned Zhanghe Forest Farm is one of the serious examples of this.

In those localities where the unhealthy tendency of denudation has remained unchecked, the leaders should be held responsible for it. At present, there actually exist some problems in our forestry work which have to be solved, such as the unclear stipulations on the possession of forests, which have given birth to some disputes, and some unsettled management systems and policies governing forestry. However, they can, by no means, be taken as excuses for not enforcing, or not strictly enforcing, the law, as some people have done. The CPC Central Committee, the State Council and the provincial CPC committee and people's government have made repeated injunctions on stopping denudation by any people before the disputes over the possession of forests are settled. Anyone who has damaged forests on any excuse has actually damaged the fundamental interests of the masses and the state, and any tolerance and indulgence towards a small number of criminal offenders also means committing crimes against the people. We must not allow the continuation of such dereliction of duty as tolerance and indulgence towards criminal offenders.

To protect forests and develop forestry is an important matter in our socialist construction. Our province lacks forestry resources. Due to "leftist" influence, our forestry resources were seriously damaged in the past. If we do not adopt measures to stop it, the 100-year-old trees may be destroyed in one day, and we shall suffer from irremediable losses. Leaders and relevant departments at various levels must be aware of the seriousness of this problem. The "emergency directive on stopping denudation of forests" issued by the CPC Central Committee and the State Council sternly pointed out that the key to stopping denudation of forests lies in the leadership. It instructed the CPC committees and people's

governments in all counties where there are forests to supervise the implementation of laws and decrees on protecting forests. The leaders in any localities where the unhealthy tendency of denudation has remained unchecked are not doing their duty, and the county CPC committee secretaries and magistrates will surely be held responsible by the CPC committees and governments at higher levels. It is necessary for the CPC committees and governments at various levels to carefully investigate the cases of denudation and take resolute measures to promptly handle these cases according to law so that the unhealthy tendency of denudation can be effectively checked.

CSO: 5000/4123

ANHUI ISSUES EMERGENCY CIRCULAR ON AFFORESTATION

OW280518 Hefei Anhui Provincial Service in Mandarin 1100 GMT 22 Jan 83

[Text] The provincial CPC committee and the provincial government recently issued an emergency circular calling on various localities to get mobilized and develop a tree planting and afforestation campaign in a down-to-earth manner this year.

The circular says: Tree planting and afforestation, covering the motherland with greenery, taking care of the national soil and protecting the environment is our important national policy. It is now a good season to plant trees. Various CPC committees and governments at all levels must look upon the all-people voluntary tree planting campaign and planned tree planting as cardinal matters and carry them out practically and expeditiously. To this end, the circular stresses:

1. Steps must be taken to raise understanding and strengthen organizational leadership in a practical manner. During the tree planting and afforestation period, responsible party and government comrades at all levels and members of the greening committees must divide areas into zones of specific responsibility, proceed to the forefront to inspect and supervise work and help the grassroots units solve problems on the spot, to bring about healthy development in the afforestation campaign. The daily routing of the greening committees must be systematically developed. Efforts must be made to afforestation work well, ensuring both selection and cultivation of saplings. It is also necessary to sum up experience in greening, to implement greening plans and so scientifically manage forests to lay the groundwork for next year.
2. Everyone must be mobilized to fight a brilliant battle in voluntary tree planting. The greening committees must assign specific tree planting plans respectively to cadres, party members, CYL members, residents in cities and towns, people's commune members, government offices, mass organizations, PLA units, schools and industrial and mining enterprises throughout the province, and let them take responsibility in fulfilling their tree planting tasks within a prescribed period. Greening committees must also report progress in voluntary tree planting through channels and must properly record results. Those who perform well should be commended; others failing to fulfill their tasks without apparent reasons should be dealt with accordingly, and action may also be taken to pinpoint leadership responsibility.

3. Steps must be taken to ensure the fulfillment of tree planting and afforestation plans. Our province has designated the period between 12 February and 12 March as the shock month for tree planting and afforestation. Various localities and units must expeditiously mobilize the masses to launch voluntary tree planting and planned afforestation activities in a unified manner. They must start a few upsurges to fulfill or overfulfill the various tasks in a down-to-earth way. Planned tree planting and afforestation must be concentrated on barren hills and the four sides and must be carried out seriously.

4. Saplings must be well prepared to lay the material foundation for tree planting and afforestation, particularly the saplings needed for tree planting and afforestation this year. Leadership at all levels must take remedial measures to help those localities and units in need of saplings.

5. Stress must be placed on science and technology in afforestation and on the actual results, such as the survival rate and the purpose of developing trees as useful timber and forests. The responsibility system specifying requirements and standards must be implemented in planned tree planting and afforestation, as well as in voluntary tree planting. Technical guidance must be given to tree planting and afforestation to see to it that it is done scientifically and to ensure that all trees planted will grow in afforested areas. In addition to grasping tree planting and afforestation, various localities must further implement the emergency directive issued by the CPC Central Committee and the State Council prohibiting chopping and felling of trees in forests in order to properly protect existing forest resources.

CSO: 5000/4134

NEI MONGGOL ISSUES DECISIONS ON FOREST MANAGEMENT

SK101014 Hohhot Nei Monggol Regional Service in Mandarin 1100 GMT 9 Jan 83

[Text] Recently the regional forestry department took further steps to emancipate their minds and stipulated eight new policy decisions on the management of state forests.

The decisions are as follows:

1. Uncultivated mountainous areas and wastelands suitable for planting trees that are managed by state forest farms but cannot be afforested in the near future can be assigned to commune members of nearby communes and brigades. Scattered trees and bushes on the assigned lands are owned by commune members. In the villages of Hulun Buir and Xingan Leagues, the scattered, thousands of years old natural forests that are owned by the state and managed by banners and counties and that cannot be afforested by the state forest farms may be assigned to communes and brigades on the basis of unchanged ownership.
2. The State Forestry Bureau, farms and stations may organize the masses in forest zones and communes and brigades near forest zones to engage in afforestation and forest construction in a planned manner. Areas where conditions permit may develop building material production and organize the broad masses of commune members to develop collective- and individual-run service trades, livestock farming and housing sideline production.
3. Production teams in forest zones and the areas near forests should properly be provided with timber for production and living use. Every year, forest farms in mountainous areas should allocate 8 cubic meters of timber to each production team and 12 cubic meters to each minority production team. Production teams are forbidden to resell the timber at a profit. Having finished the winter production, each work group is allowed to keep one-half cubic meter of timber. Through consolidation, the raw material supply of timber processing plants in banners, communes and brigades in forest zones are under a unified plan formulated by leagues, banners and local units. If their raw materials are still in short supply, plants can obtain supplementary materials from [words indistinct]. Enterprises and localities where conditions permit may engage in cooperative production.



4. Through investigations and studies, parts of grasslands and river banks suitable for planting trees near the towns in forest zones where former forestry administration is unsuitable may be assigned to the broad masses of commune members to plant trees, grass and vegetables.

5. Timber gathered by hunting people in (Ao-lu-gu-ya) and Ewenki minority areas and Oroqen Autonomous Banner should be given proper consideration. Parts of forest areas should be designated as livestock farms and hunting areas.

6. In order to rationally clear up the contradiction between the demand for and supply of timber, state forest farms managed by banners and counties may sell [words indistinct] to commune members of production teams to tackle the problems of insufficient supply of timber for commune members.

CSO: 5000/4123

QINGHAI ISSUES CIRCULAR ON EXCESSIVE LUMBERING

HK100600 Xining Qinghai Provincial Service in Mandarin 1100 GMT 8 Jan 83

[Text] The Qinghai Provincial People's Government recently issued another circular on the implementation of the emergency circular of the CPC Central Committee and the State Council on curbing indiscriminate lumbering. The circular says that since last November, most of the prefectures and counties have sent work teams to handle some cases of destroyed forests and achieved initial results. However, there are still a small number of counties in which the leading cadres have failed to pay sufficient attention to this problem and have delayed taking actions and thus failed so far to implement the directives of the central authorities and of the provincial CPC committee. They have even delayed the handling of some very serious cases involving the destroying of forests. Therefore, the provincial people's government once again calls on all prefectures, municipalities and counties to assign a leading comrade each to be personally responsible for the implementation of this work.

The leading comrades at all levels should personally go to the front-line to handle as soon as possible the typical cases involving the destroying of forests. They should hold public trials of the criminals in order to punish criminals and educate the masses. They should also classify all other cases of stealing trees and excessive lumbering according to their seriousness and nature and sternly handle them. They should resolutely put an end to the malpractice of destroying forests.

The circular of the provincial people's government says that all the cases of cadres destroying forests should be promptly and conscientiously handled, no matter whom or what level of cadres are involved. No delay in handling these cases will ever be allowed. Nor will anybody be allowed to hinder the handling of these cases. Those forestry workers who have stolen trees which were under their care should be punished even more severely. Only by so doing can we really convince and educate the masses.

CSO: 5000/4123

## INSPECTION OF HAINAN FORESTS REVEALS SERIOUS DAMAGE

HK211159 Haikou Hainan Island Service in Mandarin 0330 GMT 20 Dec 82

[Text] Recently, the central work group came to our region to inspect the situation in implementing the urgent instruction of the CPC Central Committee and the State Council on curbing the indiscriminate felling of trees. They went to seven counties, including Chengmai, Dan, Dongfang, Ya, Wanning, Qionghai and Wenchang, to Jianfengling forest zone and forestry centers in some communes and brigades to conduct investigation and study.

Over the past few years, forest resources in our region have been seriously damaged. As our region has recently implemented the relevant documents of the central authorities, the situation has improved and the unhealthy trend of indiscriminately felling trees has been basically curbed. However, we must continue to make efforts to thoroughly curb the indiscriminate felling of trees.

The central work group held: The natural conditions in our region are good. As long as we do well in grasping the protection of forests and grasping afforestation, we can restore the good ecological balance.

Comrades of the central work group introduced in detail the situation under investigation to leading comrades of the regional CPC committee, the regional commissioner's office and relevant departments. After listening to the introduction, regional CPC committee first secretary Luo Tian talked about his specific views on the work of how our region further implements the central urgent instruction and does well in afforestation and the protection of forests. He demanded: CPC committees and governments at all levels must further heighten their understanding and regard curbing indiscriminately felling trees as a current important work. They must continue to implement the policy of three fixes in forestry [fixing rights of forests, fixing private forests and fixing the forestry production responsibility system]. They must mobilize the masses to vigorously carry out forestation activities. In conjunction with the formulating of rural rules and conventions, they must implement the measures to protect forests.

Comrade Luo Tian suggested that departments, including the regional agriculture office, political and legal departments and discipline inspection departments, should organize their cadres into work groups and send them to all places to help CPC committees and government at all levels continue to grasp well the implementation of the relevant central documents.

CSO: 5000/4117

## FORESTS OF GUANGDONG SUFFER SEVERE DAMAGE; TIMBER LOSSES HIGH

Guangzhou NANFANG RIBAO in Chinese 9 Nov 82 p 4

[Text] According to incomplete statistics of the 13 state forests (bureaus) in the province, more than 20,000 cubic meters of timber have been cut since the beginning of this year causing a heavy loss to state property. The indiscriminate felling of trees in state forests has not yet been effectively curbed in some localities. This serious situation should attract the attention of the concerned local party leadership. In the emergency directive on resolutely stopping the indiscriminate felling of trees, the Central Committee and the State Council pointed out recently that: "The reason for this situation is primarily a deficiency of understanding of party leaders and agencies concerning the seriousness of illegal destruction of forests. They did not attack the action forcefully and some of them even ignore it all together." The concerned local party leaders should, therefore, conscientiously summarize the experience and lesson, if the vicious trend is to be stopped. The condition of ineffectual guidance of the forest industry must be changed to take up the responsibility realistically in the enforcement of forest protection laws. Those who destroy forests, be they units or individuals, should be prosecuted in accordance with the law without permissiveness or leniency. Resolute measures must be adopted to act immediately in accordance with the spirit of the emergency directive and the local reality to stop the vicious trend of cutting trees randomly, to protect the forests and to develop forestry.

Since the 11th Plenum of the Third Party Congress, the party and state have issued a series of important directives to protect forests and develop forestry. They point out the clear direction of revitalizing forestry. After several years spent in straightening out the irregularity and disorder, especially since the development of three determinations of forestry (determining the mountain forest rights, designating privately retained mountains, and defining the forestry production responsibility system) last year, positiveness in forest protection and afforestation has been activated among the masses. But, according to letters from the readers of this newspaper, the vicious trend of destroying forests is still unchecked in some places, especially the vicious trend of stealing trees and occupying state-owned forests. It is more serious in some places. According to the incomplete statistics of the 13 state-operated forests (bureaus) in the province, including Daodong, Daoxi, Chenmai, Xijiang, Yangjiang, Xingang, Pingshan, Mainan, Tianjingshan, Dalingshan, Hweishan, Leizhou and Diaoluoshan, the area of forests being cut and destroyed by the neighboring populace from

January to August of this year amounted to 10,680+ mu and 21,000 m<sup>3</sup> of timber were thus lost. More than 2,400 mu of forests were forcibly taken over and 4,045 mu of forest acreage were destroyed and turned into cropland. A great majority of these destroyed forests were newly created man-made forests created after these tree farms were established. In some areas, the trees were clear cut; in others a few trees were left here and there. According to the letters, many workers tried to protect the trees and were besieged and beaten. Some tree farms took the initiative to negotiate with the local commune-brigade to resolve disputes without improving the matter in any way. The Tianjingshan Forest of Ruyuan County had more than 62,000 mu of trees destroyed by the local populace and most more than 160,000 m<sup>3</sup> of timber. During the process of the three-determination work last winter and spring, the forest authority took into consideration the fact that some unreasonableness did exist when the tree farm was designed. In order to look after the interest of the local masses, through negotiation with the nearby commune-brigades and with the approval of the supervising department, 183,000+ mu of forests situated at the edge of villages (of these, the turn-over procedure of 157,000+ mu has been completed) are to be turned over to the local masses, but at present some people still go to the forests to chop down trees.

Why do the masses of some places fearlessly cut down state-owned trees? According to these letters, aside from the influence of anarchism on some masses and the instigation of some lawless elements, the major reason is the careless attitude of the leaders of some counties and communes toward this type of behavior of the masses. When such an incident was discovered they did not adopt effective measures in time to restrain it. The leaders of some places even gave in to the masses for nothing and demanded the state-operated forests to turn profits over to the masses. Or, they even support and connive with them in secret to further aggravate the local vicious trend of cutting down state-owned trees.

State-operated forests are the bases of state-operated forestry constructed with state capital and all the trees there are state property. All actions of forcible occupation and destruction of state-owned forests are wrong. It is hoped that the party leaders of related localities adopt effective measures to stop them and to punish the serious offenders in accordance with the law so as to educate the masses and to guarantee the development of forestry.

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CSO: 5000/4113

## HALTING FOREST DESTRUCTION URGED

Guangzhou NANFANG RIBAO in Chinese 31 Oct 82 p 1

[Commentary: "Put a Halt to Destruction of Forests, Rely on Mountains to Make Prosperity"]

[Text] Places throughout Guangdong are now relaying and implementing the Emergency Directive Concerning Stopping The Destructive Felling Of Trees issued by the CPC Central Committee and the State Council on 20 Oct 1982. Today this paper has published a report on how Huiyang Prefecture, to make the peasants prosperous as quickly as possible, is resolutely cracking down on criminals who seriously damage forests and has decided to resolutely close off mountains to promote afforestation. This action conforms completely to the urgent directive of the CPC Central Committee and the State Council and should be followed in other places.

In the past few years in the extensive mountainous and semi-mountainous areas of Guangdong, in the spirit of the Third Plenary Session of the 11th Party Central Committee, mountain rights and forest rights have been established, private forests have been designated, a production responsibility system for forestry has been implemented and in forest areas popular feeling is supportive, policy is stable, indiscriminate felling has been greatly reduced, and forestry production is developing solidly. This we must admit. At the same time, we must clearly see that in most places the unlawful cutting of trees, great waste of wood and even use of wood for speculative purposes is continuing. In some counties and places that border on counties and on the border between state forests and communes and brigades, indiscriminate felling is still serious. However, party and government organizations in many places are now either ignoring or are powerless to do anything about these serious problems. If this situation continues, it could destroy the support of the masses and policy in mountainous and semi-mountainous areas and there is the danger that once again there will be large scale felling.

The Huiyang Prefecture experience fully demonstrates that only if party and government organizations have a highly responsible spirit with regard to the people of the mountainous and semi-mountainous areas and dare to protect the interests of the nation and people according to law, the problem will

be quickly resolved. With the spirit of the 12th Party Congress as a weapon, the Huiyang Prefecture Party Committee profoundly understood that if they did not fundamentally put a halt to the destruction of forests then they could not make the people of the mountainous and semi-mountainous areas prosperous and might commit an offense against the people. For this reason, in the past 2 months they have led party and government organizations and judicial departments at all levels region-wide, on the basis of full investigation and research, to arrest and try 69 criminals who have severely damaged mountain forests and detained and punished over 200 criminals, thus effectively attacking the evil practice of damaging forests throughout the prefecture. In this way, they are conforming to the spirit of the CPC Central Committee and State Council directive that any unit or individual that has destroyed forests "return the seized forests or compensate for them, impose fines or mete out punishment in accordance with the degree of the destruction and with the law."

What is especially commendable is that while cracking down on criminals who severely damage forests, Huiyang Prefecture has made closing off mountains to promote afforestation a key measure to be stressed in the strategic goal for mountain people in the new situation to realize socialist modernization. In the prefecture there is less than 1 mu of cultivated land per person, but 6 mu of mountain land per person. On the foundation of implementing the responsibility system which links compensation to production, planting a few rice paddies to resolve the question of food and clothing, turning attention to the broad mountain areas, doing a good job of closing off mountains to promote afforestation and organizing commune members to cultivate privately-owned plots and develop planting and animal husbandry in mountain areas, is the only way for mountain area people to prosper and is a fundamental guarantee that the mountain area people's standard of material and cultural life will gradually be well-off. This principle still has not been understood by comrades in some areas, but the comrades of Huiyang Prefecture have understood it. Although some areas understand this principle, they have not yet adopted and implemented forceful measures, but the comrades of Huiyang Prefecture have already gone into action. They are guiding millions of people in the region to intensify closing off mountains to promote afforestation, strengthening forest management, and stopping waste of wood to make the mountain areas quickly prosperous.

Comrades of the mountainous and semi-mountainous areas of Guangdong, guided by the spirit of the 12th Party Congress, like Huiyang Prefecture, let's get into action, put a stop to destruction of forests and rely on the mountains to become prosperous!

8226  
CSO: 5000/4111

LOCAL JURISDICTIONS CRACK DOWN ON THOSE DENUDING GUANGDONG FORESTS

Guangzhou NANFANG RIBAO in Chinese 31 Oct 82 p 1

[Article: "Huiyang Prefecture Acts to Halt Destruction of Mountain Forests, Closes off Mountains To Promote Afforestation"]

[Summary] Areas in Huiyang Prefecture have cracked down on criminals who have seriously damaged mountain forests and have intensified closing off mountains to promote afforestation. From September of this year to the present, the prefecture has closed off 16,43 million mu, 70.2 percent of the mountain region, for afforestation, restored 200,000 mu of damaged forests, and opened up 613 kilometers of fire lanes. The masses have welcomed these measures to safeguard their interests.

Beginning in September, Huiyang Prefecture cracked down hard on criminals who damaged forests. The Longchuan County Party Committee organized work brigades that quickly uncovered a gang at Sidu Commune which had been felling trees for a long time and arrested the two ringleaders. After checking its timber, Heyuan County quickly discovered a case of profiteering at Dengta Commune, in which a post office truck was used to cart lumber to Guangzhou where it was sold at high prices, the chief culprit has been punished. During the period of closing off mountains to promote afforestation, they arrested 69 criminals responsible for serious damage to forests, administratively detained 288 persons, decided 1,262 long-standing cases, settled 763 disputes, and levied fines against more than 3,200 persons who had violated contracts by randomly cutting and overcutting forests. Overall, the county levied over 190,000 yuan in fines, money which was then used in the afforestation effort. By upholding the principle of managing forests according to the law, they effectively stabilized forest production. At the same time, they established an agency to organize closing off mountains to promote afforestation and developed a forest protection corps. Forest protection personnel at all levels region-wide increased from the original 3,300 plus to over 10,700; over 80 percent of the communes region-wide have concluded agreements on closing off mountains to promote afforestation.

To do a better job of this, local areas have conducted a reorganization in which, with the approval of the relevant sections, kilns which have both the resources and export tasks will continue to maintain production; kilns which can convert to grass and coal are to be converted within a set time;



privately operated and partnership kilns which burns mainly wood and which lack or are short of resources and do not have any planned supply must cease operations. In this way, the volume of wood consumed annually was reduced by 660,000 cubic meters.

To strengthen the management of timber, the region has virtually shut down the free market in wood, checked up on 37.5 million cubic meters of wood which was randomly cut or overcut, and over 3,000 dan of firewood.

The mountain area of Huiyang Prefecture amounts to more than 28 million mu, or 70 percent of the total area of the prefecture. Last year after forestry rights were put into effect and the forestry production responsibility system was carried out, the people did a better job of stopping the indiscriminate felling. The campaign to become rich through managing the mountains was popular among the masses and many commune members were sufficiently motivated to voluntarily raise money, find seeds and seedlings and plant "small four gardens." Last winter and this spring the people of the area created 420,000 mu of forest, a record year for overfulfilling the afforestation quota since liberation. However, the forestry production base is weak and has been severely damaged, the area of barren hills and sparse woodland is great, and there is much that needs to be done in nurturing and thinning, aerial seeding was not as thorough as it should have been the Huiyang Prefecture Party Committee decided to stress mass-type closing off of mountains to promote afforestation and reverse the backward situation in forestry production. The Prefecture Party Committee felt that to realize the strategic task of quadrupling the gross value of agricultural production region-wide by the end of this century, it is not enough just to focus on the existing several million mu of cultivated land, but the more than 28 million mu of mountain land in the area must be considered. Doing a good job of this not only restores ecological balance, preserves the soil and water and promotes agricultural production, it also benefits mobilizing the initiative of the masses to make the mountains economically productive and develop a diversification of enterprises such as forestry, fruit, tea, and dried mushrooms, to create greater material wealth and make the peasants more prosperous as quickly as possible. Through study, the counties' harsh crackdown on criminals who destroy forests and their resolve to do a good job of closing off hillsides to promote afforestation was strengthened.

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CSO: 5000/4111

## YUNNAN DEALS WITH CASES OF TREE-FELLING

HK111025 Kunming Yunnan Provincial Service in Mandarin 2300 GMT 10 Jan 83

[Text] Yesterday, the provincial CPC committee and the provincial people's government sent work groups again to key prefectures and autonomous prefectures to investigate and deal with cases of damaging forests in order to curb the unhealthy trend of indiscriminately felling trees.

After the CPC Central Committee and the State Council issued urgent instructions on curbing indiscriminate felling of trees, in November last year, the provincial CPC committee and the provincial people's government organized seven work groups, which respectively went to 11 prefectures, autonomous prefectures and municipalities to conduct supervision and inspection and help them implement the urgent instruction. In coordination with each other, political and legal departments in all places have stepped up investigating and dealing with many cases of damaging forests so that the unhealthy trend of damaging forests in some prefectures and autonomous prefectures can be effectively curbed.

However, some individual prefectures, autonomous prefectures, counties and municipalities have not vigorously investigated and dealt with cases of damaging forests. New cases of damaging forests have frequently occurred. Some places have not sufficiently understood the importance and urgency of implementing the urgent instruction and the serious harm of damaging forests. Their attitude is not firm and measures are not effective. With a view to quickly changing this situation, it is necessary to severely and quickly deal with the big and important cases of damaging forests.

Yesterday, the provincial CPC committee and the provincial people's government sent two work groups again, headed by Comrade (Dang Xiangming), provincial CPC committee Standing Committee member, and Comrade Shao Feng, vice governor, respectively to the western and southern part of Yunnan to inspect and supervise work. Before the work groups' departure, they concentrated on study and listened to the report of the provincial indiscriminate tree-felling prohibition office on the situation in indiscriminately felling trees in the whole province.

CSO: 5000/4123

## MEASURES TO PROTECT FOREST RESOURCES URGED

Kunming YUNNAN RIBAO in Chinese 3 Nov 82 p 1

[Article: "We Must Adopt Decisive Measures To Protect Forest Resources"]

[Text] On October 30th, the Yunan Provincial CPC Committee and the Provincial People's Government issued a notice on resolutely implementing the "Urgent Directive of the Party Central Committee and the State Council on Curbing Indiscriminate Destruction of Forests".

The notice said that all party committees, all levels of government and all concerned departments must resolutely implement the "Urgent Directive of the Party Central Committee and the State Council on Curbing Indiscriminate Destruction of Forests" issued by the Central Committee on October 20th.

The notice said that in our province, the random felling of trees, forest fires and burning woodlands in order to bring land under cultivation as well as other acts that destroy forests are still rampant in certain areas. The provincial CPC committee and the people's government have not conscientiously implemented the stipulations concerning closing off open timber markets in forest areas and in adjacent areas. It is a widespread practice to exceed timber quotas and to cut trees wantonly. In many areas, cases of burning woodland are not strictly or promptly handled. There are even incidents of those who repeatedly beat up personnel protecting the forests. All this has caused the evil practice of indiscriminate deforestation to spread and grow. The basic reason for this is that a number of leaders are not aware of the seriousness of illegally destroying forests. They do not strongly attack these anarchistic tendencies and the illegal criminal activities of a handful of people who flout law and discipline by seizing and stealing forest resources, some even tolerate and support them. The provincial CPC committee and the people's government especially made the following announcement based on the spirit of the "Urgent Directive" of the Central Committee and the State Council in light of the conditions in our province.

First, it is necessary to immediately organize the working personnel in party and political organs to conscientiously study the "Urgent Directive" of the Central Committee and the State Council. At the same time it is necessary to

widely propagate the spirit of the directive among the broad masses of rural commune members, farm workers, cadres in enterprise units and public agencies and the masses. Everyone must be well-informed. While propagating and studying this directive, it is necessary to integrate the conditions of that area and to correct existing mistaken perceptions in a practical manner. It is also necessary to seek unity of thinking and to ensure that the directive of the Central Committee and the State Council is resolutely implemented.

Second, all levels in the province, region (prefecture, municipality) and country must organize work teams to go to the grass-root units, particularly those areas where indiscriminate destruction of woodlands is rampant to help local party and political organs implement the directive of the Central Committee and the State Council. They must inspect implementation, curb indiscriminate destruction, investigate and mete out punishment for incidents involving the illegal destruction of forests.

Three, it is necessary to conduct thorough checks on incidents involving the illegal destruction of forests and deal with them sternly. All those who seize and damage state or collective mountain forests, whether they are units or individuals, must return what they have taken or pay compensation for it, be fined or be sentenced according to the law, depending on the circumstances of each case. It is necessary to resolutely attack the handful of criminals, under no circumstances should they be tolerated or shielded. At present, it is necessary to select several typical cases and publicly deal with them.

Fourth, it is necessary to resolutely close off open timber markets in forest areas and adjacent areas according to the stipulations of the Central Committee, State Council provincial CPC committee and the people's government.

Fifth, it is necessary to continue to focus on doing good work on the "three fixes" in forestry. It is necessary to make every effort to ensure quality and quantity, and to successfully fulfill these quotas. All those who cut wood or exceed quotas must be stopped immediately regardless of whether they are areas that have or have not fulfilled the "three fixes." All timber that has already been cut must be frozen. Furthermore, it is necessary to earnestly check up on units and personnel who enter forest areas for cutting and processing. It is necessary to ascertain the circumstances of all those who cut outside of state plans and engage in indiscriminate deforestation, they must be sternly dealt with.

In areas that are accustomed to planting dryland crops, it is necessary to have fixed farming land and scientific cultivation in order to curb the old practice of burning woodlands to grow grain.

Sixth, it is necessary to protect the crucial importance of forests in the county. All county CPC committees and the county people's government must strengthen their leadership and make sure that production brigades carry out their responsibility of protecting forests. They must conduct checks on forest protection. If there is any destruction of forests, they must adopt

decisiye measures and immediately put a halt to it. To let this go unchecked is a dereliction of duty. According to the directive of the Central Committee and the State Council, they must investigate the responsibility of leadership of the secretary of the county CPC committee and the county magistrate.

As for incidents involving the destruction of forests in contiguous zones between districts, counties and communes, all parties concerned must adopt measures of their own accord and work in coordination to investigate and deal with these incidents.

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CSO: 5000/4112

## MARINE ENVIRONMENTAL PROTECTION LAW READIED

OW222122 Beijing XINHUA in English 1500 GMT 22 Jan 83

[Text] Jinan, January 22 (XINHUA) -- China has worked out detailed regulations for the implementation of its first marine environmental protection law, which is to become effective March 1.

An English translation of the law will soon be available. All ships, platforms, aerial aviation machines and underwater vessels must observe this law when engaging in navigation, exploration, resources development, production, scientific research and other operations in marine waters under the jurisdiction of China.

A meeting called by the environmental protection department under the State Council earlier this month decided to launch a publicity campaign for the law, which was approved at the 24th Session of the Standing Committee of the Fifth National People's Congress on August 23, 1982. The law will protect China's marine environment and resources and people's health, prevent pollution-caused damage, preserve the marine ecological balance and promote the nation's oceanological work as a whole.

The meeting, held January 11 to 16 in the port city of Yantai, Shandong Province, examined work for the implementation of the law.

The country has 18,000 kilometers of coastline, a multitude of islands and vast marine waters and continental shelves, with abundant natural resources.

With the approval of the State Council, the Yantai meeting announced, a number of regulations will go into effect along with the marine environmental protection law on March 1. They include a document governing environmental protection for offshore petroleum exploration operations, and regulations concerning the dumping of waste materials in China's seas and prevention of pollution caused by ships.

China has a pressing need to improve its marine environmental protection work, still a "weak link" in its economic construction. Despite progress made over the years, pollution is serious in sea areas off some river mouths, harbors, inland and coastal sea areas.

Participants in the Yantai meeting agreed that it is now time to use the force of law to improve marine environmental protection although China has a good record for oil pollution control in the Bohai and Yellow Seas and in environmental investigations and inspection in the East and South China Seas.

A number of ships have been refitted for law enforcement purposes.

REASON, PURPOSE OF 'MARINE ENVIRONMENTAL PROTECTION LAW' EXPLAINED

Beijing GUANGMING RIBAO in Chinese 25 Aug 82 p 3

[Interview with Responsible Comrades of the Ministry of Urban and Rural Construction and Environmental Protection: "Implement Marine Environmental Protection Laws, Protect Our Nation's Ocean Environment Well"]

[Text] The responsible comrades of the Ministry of Urban and Rural Construction and Environmental Protection recently answered our reporter's questions on the "Law on Marine Environmental Protection of the People's Republic of China" passed recently by the Standing Committee of the National People's Congress.

[Question] Please talk about the reason for drawing up the "Law on Marine Environmental Protection?"

[Answer] China's coastline is more than 18,000 kilometers long, the country has a vast territorial sea, there are many islands, the continental shelf is wide and broad and possesses rich ocean resources. The development, utilization and protection of the marine environment and resources are an important task of modern socialist construction. As coastal cities develop, as industrial and agricultural production develops and as endeavors to develop the oceans progress, China's marine environment has been polluted and damaged to varying degrees. Certain river mouths, harbors and bays, inland seas and some parts of the coastal regions have been seriously polluted and damaged. Because of the attention of the party and government, coastal provinces and cities have done a lot of work in protecting the marine environment and definite results have been realized. But, at present, our nation's marine environment management work is a weak link. Prevention and control of marine pollution and protection of the marine environment have become very important and urgent tasks facing us. Establishing appropriate laws and strengthening management of the oceans by law are very necessary.

[Question] What is the purpose of the "Law on Marine Environment Protection?"

[Answer] The first article of this law stipulates that the purpose is "to protect the marine environment and resources, prevent pollution and damage, maintain ecological balance, protect human physical health and promote the development of

marine undertakings." Protection of the marine environment is not passively maintaining the natural features of the oceans, it is to better utilize the marine environment and resources. It is not to limit people's normal activities, it is to require that these activities conform with the laws of marine ecology. It must be pointed out that pollution of the ocean is more serious and more complex than other types of pollution. This is because the sources of pollutants in the ocean are extensive, there are many types of harmful substances, large areas of dispersion, their control is complex and their treatment is difficult. Therefore, this law requires people to strictly follow the laws of marine ecology in carrying out activities involving the oceans to ensure the good quality of the marine environment.

[Question] What are the main problems that pollute and damage our nation's marine environment at present? How will the "Law on Marine Environmental Protection" solve these problems?

[Answer] The main factors that pollute and damage China's marine environment at present are the following five aspects: land-based sources of pollution, pollution by petroleum prospecting and development, pollution by ships, pollution by the dumping of garbage and damage by engineering construction in the ocean. This law has clear legal stipulations to prevent pollution and damage of these five aspects. At the same time, to guarantee that these regulations are implemented, this law has clearly stipulated a supervisory agency. The legal responsibility for violating this law, including the responsibility for compensation of civil damage, administrative penalty and criminal responsibility, is also clearly stipulated.

[Question] Is the "Law on Marine Environmental Protection" applicable to foreign vessels and companies entering China's territorial waters?

[Answer] The law is applicable. As China's marine undertakings develop, the number of foreign vessels, aircraft and development companies entering our nation's territorial waters will increase. Monitoring and controlling the discharge and dumping of waste by foreign vessels and companies are also the tasks of China's marine environmental protection work. Foreign vessels, platforms, aircraft and development companies entering the territorial waters of the People's Republic of China must strictly abide by the related regulations of this law. This protects our nation's maritime rights and protects the world's marine environment.

[Question] Why does this law "take effect 6 months after its promulgation?"

[Answer] This is mainly because of the consideration that this law is China's first comprehensive marine environmental law. Its implementation involves problems in many aspects and there must be a definite time for preparation. For example:

I. Ideological preparation. We must widely propagandize and educate the people to improve their understanding of the importance of protecting the marine environment, become familiar with the requirements and stipulations of this law,



master the scientific knowledge to protect the marine environment, establish the social custom of treasuring and protecting the marine environment, and establish a good ideological foundation for executing and obeying the law.

II. Operational preparations include the establishment, promulgation and execution of concrete stipulations and criteria necessary for this law, such as stipulations to prevent pollution by vessels, and stipulations to prevent pollution due to the dumping of waste into the ocean, at the same time, we must establish and perfect the necessary management methods.

III. Organizational preparations. These include readjustment of agencies and organization of managerial teams to adapt to the requirements in executing the law.

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CSO: 5000/4078

## SURVEY OF COASTAL ZONES, TIDAL FLATS UNDERWAY

OW190116 Beijing XINHUA in English 1529 GMT 16 Nov 82

[Text] Beijing, November 16 (XINHUA) -- China is conducting a nationwide survey on resources in coastal zones and tidal flats, according to Yan Hongmo, deputy director of the State Oceanography Bureau.

Yan, also deputy head of the national group in charge of the survey, presented a work report at the third meeting of the group, which opened here today.

He said the seven provinces, two municipalities and an autonomous region along China's continental coast started the comprehensive survey in 1980 under a nationally unified arrangement.

Among them, Jiangsu, Zhejiang, Shandong, Guangdong and Liaoning Provinces and Shanghai Municipality have done the best jobs. The whole work is to be completed in 1986.

China has more than 18,000 kilometers of continental coastline, Deputy Director Yan said. The coastal provinces, municipalities and region all have dense populations and are highly important to the national economy.

"The exploitation and utilization of the rich resources in the coastal zones and tidal flats plays an important part in the construction of economy and national defense and the development of China," he said.

However, Yan said, the coastal zone is very complicated. "Because of the lack of a thorough understanding of the coastal zones, we have made some unreasonable exploitation and utilization of resources in the zones in past years, some of which have upset the natural ecological balance.

"So, it is necessary to comprehensively survey the resources and environment in the coastal zones to gain an all-round understanding of the natural, social and economic situation there. This will provide a scientific basis for programs on comprehensive utilization and effective protection of the coastal resources," he said.

The deputy director said the exploitation and utilization of resources in coastal zones involves the departments of aquatic products, agriculture, shipping, light industry, hydropower, petroleum, geology, minerals, conservation, post and telecommunications and national defense. The comprehensive survey should aim at promoting the development of the local economy and production.

Based on the results of the survey, a program on comprehensive exploitation and utilization of the resources will be worked out, the deputy director said.

CSO: 5000/4130

## MEASURES TO CONTROL WATER POLLUTION PROPOSED

Beijing GUANGMING RIBAO in Chinese 9 Nov 82 p 2

[Letter to the editor: "Controlling Water Pollution and Protecting Water Resources is Extremely Urgent."]

[Text] Recently, at the "National Symposium on Controlling Water Pollution and Managing Water Quality and Water Resources: which was convened in Fuzhou, specialists felt that at present in many places in China, the problem of inadequate water resources and water pollution has affected urban construction and economic development. Controlling water pollution and protecting water resources has become a very urgent matter.

The specialists proposed the following with regard to improving pollution control and water resources management:

1. Reform the management system. Both the quantity and quality of water resources for urban areas must be taken into consideration and the rational use of water resources and prevention of water pollution have an inseparable connection. For a long time now, urban water resources have been separately managed by the water supply, water use, water management, and water control departments: there has been duplication of agencies, each doing things in its own way. Practice has shown that this kind of management system is very irrational and they propose that with the joint management of environmental protection, water conservancy, geology, planning, construction, agricultural, navigational and aquatics products departments, national level, river basin level, and local level water resources management agencies be established to formulate relevant rules and regulations.
2. Vigorously control industrial waste water pollution. Urban pollution now is largely industrial pollution and industrial departments should actively promote the Anshan Iron and Steel Company experience of combining technological reform and through strengthened management, reform industrial processes, separate clean and polluted water, reclaim materials, and economize on water use to reduce polluted effluent, and combine prevention of water pollution and increasing production while economizing and improving production levels.
3. Treat agricultural water pollution seriously. A current point of emphasis is to improve efficiency of irrigation to save water and to reduce the runoff

of pesticides and chemical fertilizers. Rural commune and brigade run enterprises that are serious polluters such as small electroplating plants and paper mills should be reorganized, moved, or merged. The key question at present is the question of how to scientifically formulate water quality standards and a rational tillage system, to stop pollution of the environment, soil, crops, and groundwater, and to consider the efficient utilization of polluted water all year round. Chen Youren [7115 2589 0088]

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CSO: 5000/4111

## MONITORING OF MARINE POLLUTION NEEDED

Guangzhou NANFANG RIBAO in Chinese 17 Nov 82 p 1

[Article: "'Red Tide' Discovered in Pearl River Estuary"]

[Text] On the 4th of November, a group of scientific and technical research personnel from provincial and municipal scientific cooperative organizations investigated the water quality of the estuary of the Pearl River on the north-east side of Neilingding Island; they discovered a large expanse of water that was deeply discolored. It was about 3 kms wide and 12 kms long. Personnel from the Guangzhou Municipal Central Environmental Monitoring Station participated in the investigation and took water samples back to Guangzhou for analysis. It was determined by Mo Zhucheng [5459 3796 2052], aquatic organisms engineer, that the substances causing the discoloration of the water were huge growths of euglenophyta as well as smaller amounts of [jiaojia 6037 3946] algae, [jiaoci 5037 0459] algae and [gutiao 7539 2742] algae. According to quantitative calculations, each liter of water contained 7.44 million cells of euglenophyta. This is commonly called the "red tide."

"Red tide" is a danger signal of marine pollution. Its appearance is due to marine pollution. According to our nation's specialists, there are 39 kinds of "red tide" organisms distributed throughout the coastal waters of China. Under normal conditions, the proportion of "red tide" organisms among plankton is not high. When large volumes of industrial liquid waste and waste residue are discharged into a body of water, there are large increases in phosphorus, nitrogen and other nutrients, salt, iron, manganese and other trace elements as well as certain organic compounds in the sea water. The "red tide" organisms immediately appear and propagate in vast amounts.

The most serious danger of the "red tide" is that it suffocates and kills large numbers of fish, shrimp, crabs, shellfish, etc. A large amount of oxygen is required because "red tide" organisms propagate in huge quantities and decompose after death. Once dissolved oxygen in the sea water is used up by "red tide" organisms, if it is not promptly replaced, fish, shrimp, crabs, shellfish, etc, will suffocate. This will seriously destroy biological resources. The only effective way to thoroughly solve the problem of the "red tide" is to prevent marine pollution. Therefore, environmental protection departments hope that personnel working in this sea area will pay close attention to the development of the "red tide" and promptly report on conditions to local authorities. They also suggest that concerned leading agencies adopt effective measures as soon as possible to prevent pollution and protect the marine resources of the estuary of the Pearl River.

## CHINESE-AMERICAN SCIENTIFIC COLLABORATION YIELDS GOOD RESULTS

Beijing RENMIN RIBAO in Chinese 3 Aug 83 p 3

[Article: Early Prediction of Water Pollution With a New Accurate and Economical Method]

[Text] It is possible now to predict changes in water quality by evaluating the structure and function of protozoan groups living in it. This finding is the outstanding result of a collaborative study conducted from October 1981 to March 1982 by researcher Shen Yunfen [3088 7291 5358] of the Institute of Aquatic Biology, Chinese Academy of Sciences, and Professor Keynes [?Kaiensi], a well-known American environmental biologist.

Shen Yunfen, a protozoa specialist, was a 1981-1982 participant in the United States-China Scholar Exchange Program, during which time she did her study in the United States. Her collaborator Professor Keynes of the University of Virginia devised a new method in the 1970's for studying protozoan ecology that employed pieces of foam plastic as an artificial medium. The present collaborative study uses this research approach of Professor Keynes' to study the structure and function ecology of protozoan groups to evaluate and predict changes in water quality. During a 5-month period they conducted toxicologic tests on the function and structure of protozoan groups living in domestic sewage and in industrial waste water, both of varying quality and concentrations. They also compared them with such changes noted among protozoan groups living in other external contaminants and in downstream river sections. They alternated and conducted seven experiments (each lasting 2-3 weeks), which accrued considerable data, and their study met the target date.

The study received wide acclaim in the United States, and was recognized not only as an innovation in protozoan studies, but also for its high application value. In China, where use of living organisms to assess water quality is not standardized at present, an accurate yet economical method to do this may evolve from results of this study; therefore, a new approach is gained for early prediction of water pollution.

5292

CSO: 5000/4067

## DISTRIBUTION, VARIATION OF POLLUTANTS IN JIAOZHOU BAY STUDIED

Qingdao SHANDONG HAIYANG XUEYUAN XUEBAO [JOURNAL OF SHANDONG COLLEGE OF OCEANOLOGY] in Chinese No 4 Dec 82 pp 5-12

[Article: Numerical Modeling of the Circulation and the Pollution Dispersion in Jiaozhou Bay]

[Excerpts] Calculation Results

Although the diffusion term is retained in the transport equation of the Leendertse model, using Elder's empirical formula of diffusion coefficient for a bay several tens of kilometers across such as the Jiaozhou Bay, the role of diffusion for pollutant transport is negligible. For one tidal period, the accumulated COD flow for the bay opening cross-section is computed to be 84 tons whereas the accumulated COD diffusion is only 0.29 tons. Therefore, in the analysis we may regard the distribution and variation of pollutant concentration in Jiaozhou Bay to be essentially the result of only stratotransport.

Based on the results and the distribution of residual currents of the Jiaozhou Bay tide obtained in this calculations, the residual currents consist of small vortex systems and have negligible contribution to the pollutant transport and bay mouth discharge. In addition to currents caused by wind, the results of this calculation are mainly for tidal currents.

Tide variation in this 20 kilometer wide small bay is quite small, especially for the main body of water north of Huangdao and Tuandao. Except during tide reversals, the directions of tidal currents are very much the same. For this reason we may confidently use the approximate concepts of flood tide and ebb tide of the entire bay.

During flood tide clean seawater of zero concentration enters the bay through the mouth. A tongue of pure sea water gradually extends northward and reaches the center of the bay at high tide. During this time since the water in the bay cannot flow out, it can only push northward, as a result, the pollutant also migrates northward and stagnates at the north part of the bay, causing the average density in the bay, especially the density at the northern tip of the bay, to reach a maximum. In addition, the

concentration gradient also reaches a maximum because pollutants near the sources do not have adequate time to move. During an ebb tide the current reverses and the pollutants migrate southward along with the seawater and some of the pollutants flow out of the baymouth. The transport of the pollutant during an ebb tide is faster than that during a flood tide, its concentration decreases and reaches a minimum at the low tide. Of course, the situation near the baymouth is exactly opposite. During a flood tide the pollutant concentration at the bay mouth is dominated by the incoming fresh seawater and shows a low value. During an ebb tide, the fresh water at the bay mouth is gradually replaced by high concentration polluted water from within the bay and a high concentration is observed. This can be seen where the concentration variations south of Huangdao bay mouth and north of Huangdao bay mouth follow basically the same pattern but the concentration variation near the northshore bay tip is exactly the opposite.

(2) Since the tide is always greater in the middle of the bay, the flow velocity is smaller near the coastline and the pollutant transport in the middle of the bay is faster than that near the shore. As a result, pollutant concentration is always more uniform in the middle and the gradient near the shore is always higher.

(3) Since the tide in Jiaozhou Bay is basically flowing back and forth in the north-south direction, the transport in the east and west shores is mostly along the shoreline and the transport at the north and south shores is mostly toward the shore or away from the shore. The east and west shores (especially the east shore) are concentration locations of pollution sources, so the dispersion of pollutants at the east and west shores is slower than at the north shore. Consequently, the pollutant concentration gradient in the small bay northeast of Yindao in the north is always smaller than the gradients at the east and west and the distribution is more uniform.

(4) Jiaozhou Bay is shallow (average depth is 9 meters) and the tidal difference is large (major half-day tidal difference exceeds 3 meters), calculation shows that in a half-day tide cycle the accumulated water body flowing into and out of the bay mouth (Tuandao-Xuejiadao cross-section) is  $8.89 \times 10^8 \text{ m}^3$  (bay mouth one way accumulated runoff), equal to approximately 1/3 of the water body of the entire Jiaozhou Bay.

Judging from the relative exchange water volume, the discharge volume of pollutants must be correspondingly large for such a shallow bay (plus the fact that there is a wide open ocean outside the bay). Based on the calculation results, it takes approximately five periods to approach a distribution equilibrium for any given initial value (see Table 2). Under an equilibrium distribution the amount of pollutant expelled in one cycle is of course equal to the total discharge of all the polluting sources within one cycle, approximately 78 tons. But the calculated pollutant runoff for a half-day cycle is 84 tons. This discrepancy of 7 percent can be attributed to computational error and the fact that computations have not been carried out to absolute equilibrium. But the main reason is that



nonlinear effects are not negligible for such a shallow bay. This calculation is therefore, imprecise and should only be used as a reference.

Table 2

		Computed total COD									
		1	2	3	4	5	6	7	8	9	10
Number of cycles											
Total COD (tons)		1876.46	1781.11	1774.94	1786.52	1806.79	1831.72	1859.08	1887.45	1915.97	1944.01
Relative error %		5.0	0.3	0.6	1.0	1.4	1.5	1.4	1.4	1.4	1.4

(5) With the polluting sources removed, calculations were done for 10 cycles, the amount of pollutant in the entire bay in each cycle changes almost linearly (see Table 3). Although the concentration at various locations inside the bay gradually decreased, the concentration in the vicinity of the bay mouth remains almost unchanged. Consequently, the amount of pollutant runoff out of the bay mouth in each cycle is almost a constant. This is because the original pollutant discharge ports, way up north of Tuandao and Huangdao, are all far away from the bay mouth, so the high concentration is always in the northern part of the bay and the concentration at the bay mouth is always very low: (1) the pollutant decrement per cycle is about 86 tons. With pollution sources removed, the total amount of pollutant in the bay is 1929 tons. Therefore, it takes about 11 cycles to reduce the amount of pollutant by half; this is the so-called half-life. Similar results may also be arrived at using the variation of bay mouth runoff with some slight discrepancy. Of course, since the computation used pure seawater input during the flood tide, the actual half-life should be somewhat longer and the calculated value may be taken as the minimum half-life.

Table 3

		Variation in total COD (with pollution source removed)									
		1	2	3	4	5	6	7	8	9	10
Number of cycles											
Total COD (tons)		1929.34	1838.84	1749.15	1660.13	1571.45	1483.50	1396.80	1311.81	1228.90	1148.44
Decrement (tons)			90.5	89.7	89.0	88.7	88.0	86.7	85.0	82.9	80.5

(6) The cycle-averaged concentration distribution after equilibrium is basically in agreement with the overall trend of the actually measured concentration center in the northwest part of the bay near the first of Daguhe. Considering the fact that the COD input of Daguhe, 645.00 gram/sec, is approximately 42 percent of the entire Jiaozhou Bay land COD input (1531.15 gram/sec), it is not difficult to understand the occurrence of the high concentration center.

## Application of Results and Refinement of Calculation

(1) This present calculation gives the concentration distribution and its change for given pollution ports and amounts of discharge. In order to make forecast for environmental protection purposes, we still need to do the following: 1) Establish a water quality standard for Jiaozhou Bay and make proper environmental forecasts based on the water quality standard and the calculation results; 2) This paper provided confirmation of actual measurement data. The calculation made use of COD pollutant quantity determined by the Mn method. Most environmental protection regulation, however, uses Cr measurement method in controlling the amount of waste water discharged by plants and cities. When using the results of this calculation it is therefore necessary to do measurements with both methods and obtain the ratio.

(3) When the number of pollution sources and the amount of pollutant discharge is increased, it is only necessary to enter new pollution source function values in the computer and pollutant distribution and change for the new condition can be obtained.

(3) Based on the calculation and analysis, if new pollution discharge ports had to be added, then obviously (1) a pollution source built near the bay mouth will have its pollutant expelled faster than a source in the interior of the bay, and (2) a pollution source built at the north shore will have its pollutants transported faster than sources built at the east or west shores.

Finally, the following improvements should be made in the calculation for more accurate forecasts:

(1) Actual measurement values should be used for bay mouth concentration boundary conditions during flood tide. In this work pure seawater input was used to compare with 434 measurement points. The actually measured average concentration is 0.85 and the calculated average concentration using pure seawater input (i.e., concentration = 0) is 0.52. The computed value is too low as compared to the actually measured value. If a concentration of 0.5 were used for the input boundary condition, then the calculated average value is 1.13, which is too high. To determine a proper input value empirically, a greater number of measurement points and more accurate measurements are needed to optimize the value.

(2) This calculation did not take into account effects due to the wind. Jiaozhou Bay is situated in the eastern Asia seasonal wind zone, northern wind prevails in the winter and southern wind prevails in the summer. The wind induced currents will undoubtedly contribute to the stratoglow transport in Jiaozhou Bay. Therefore, the wind effect should be included in the calculation and accurate wind data will be an additional input in the computation.

9698  
CSO: 5000/4118

## STANDARDS, RESEARCH ON POLLUTANTS IN FEEDS URGED

Nanjing XUMU YU SHOUYI [ANIMAL HUSBANDRY AND VETERINARY MEDICINE] in Chinese  
No 4, 20 Aug 82 pp 178-180

[Article by Pan Zhonghua [3382 0022 5478] of Research Institute of Animal Husbandry, Shanghai Municipal Academy of Agricultural Sciences: "PRC Animal Husbandry and Environmental Protection Studied"]

[Text] I. Current Status of Environmental Pollution and the Significance of Research on Environmental Protection

With the development of industry and extensive application of insecticides, environmental pollution has become a serious problem. According to related data, insecticide contamination of the human body involves mainly organochlorine agents, of which the major ones are BHC, DDT, and dieldrin (the three together amount to 94 percent of all insecticides used, other insecticides amount to only 6 percent.) About 98 percent of the BHC content of the human body enter through animal products (meat, milk, fats, eggs); 96.6 percent in the case of DDT. Of these, chicken eggs alone amount to 32.4 percent. By comparison, only 2-4 percent of the contaminants enter through such routes as grains, vegetables, and water, into the human body. It is reported that the contents of BHC and DDT in human fatty tissues of Chinese (1.94-20.29ppm of BHC; 8.86-17.74 ppm of DDT) far exceed those of the British and American (0.3-0.4 ppm of BHC; 10.54 ppm of DDT). The high insecticide contents of animal products are the direct cause of contamination of the Chinese to such a serious extent. Some relatively low density residual environmental pollutants in the natural world (such as organochlorines) have a very strong biological concentration action (biological amplification). This type of step-by-step enlargement phenomenon in the food chain is frightening. For example, when aldrin is present in the water, its content is amplified 500-fold in the body of planktons, 4,500-fold in the body of small fish, 10,000-fold in the bodies of large fish and fowls that eat the small fish. Because domestic animals are at the apex of the food chain, in the ecosystem the contents are the highest. In a manner of speaking, when men eat animal products, the original low density residual poisonous substances have been processed and concentrated in every link of the food chain to enter the human body and endanger human health. The development of research work on the protection of

the animal husbandry environment is extremely important for increasing animal husbandry production and improving the food quality of animal products. In recent years, foreign countries have strengthened research on this aspect and enacted strict laws concerning the standards of permissible limits of insecticide residues. In China, this work is still in the beginning stage, some localities have not yet given it the necessary attention.

## II. Contents of Research on the Protection of Animal Husbandry Environment Urgently Needed

Research on the protection of animal husbandry environment involves many subjects and all of these have both economic and social benefits. Presently, the author believes that the following aspects are most urgently needed:

A. The Problem of Standards: Standards are a productive force. In foreign countries, there are sanitary standards for food, safe application standards for insecticides, and sanitary standards for animal and fowl feed. Strict laws and regulations are enacted. In China, although standards of food sanitation and insecticide application related to environmental pollutants have been established, there are yet no sanitary standards of feed for domestic animals so there is an extremely serious phenomenon of excessive environmental pollutants in foods and it is difficult to implement food sanitation standards. Therefore, the standards should be in sets. Research must be carried out to formulate sanitary standards of feed in order that the standards can be enforced. The three sets of standards should form a complete chain to condition and promote each other.

The contents of research on sanitary standards for feed materials should be formulated in accordance with differences in the environmental pollutants and the types of domestic animals. The method of research is generally similar, and should be based upon the sanitary standards for foods. Through a combination of laboratory experiments, production property tests, toxicological data, and production surveys, the sanitary standards of the contents of the various environmental pollutants of feeds for pigs, sheep, cattle, chickens, ducks and rabbits should be studied to guarantee the sanitary quality of foods of animal products.

### B. Survey of Environmental Pollutants in Common Feeds of China:

Because there is a lack of understanding of the contents of environmental pollutants (insecticides, heavy metals, etc.) in feeds in China, there has been a certain blindness in research subjects of veterinary medicine for a long time. In animal husbandry production, incidents of death from poison occur regularly and the production level does not increase as it should. Although attention has been paid to obvious clinical symptoms of domestic animals (injury to bones, osteodynia and white muscle disease) caused by either excess or deficiency of such substances as fluorine, cadmium, or selenium, most of these are often in the form of secondary symptoms and not easily recognized to be causing losses in production, (these diseases are obviously endemic). Therefore, it is

necessary to organize manpower to detect and investigate insecticide residues and heavy metals in the feeds of the various provinces, cities and autonomous regions of China. Based upon the results of such studies, research subjects in animal husbandry and environmental protection may be designed. A research subject for environmental protection may be established for whatever substance that is harmful and its content is too high. All substances that are needed for nutrition and are in reality deficient should also be established as subjects of study in animal and fowl feed for the purpose of formulating the additive standard for feed. Based upon the different condition of different localities, different additive standards should be enacted. In this manner, the level of production of animal husbandry may be greatly increased and there will be no waste products in animal husbandry production (which are products of animal husbandry having a content of environmental pollutants higher than the sanitary standard for food).

#### C. Participation in Ecological Research:

Research on the food chain is a major content of ecological research. In the natural world, domestic animals are at the highest point in the various stages of the food chain and are a direct link with man. The density of environmental pollutants is the highest in this link of domestic animals; therefore, are an indispensable aspect in the evaluation of environmental quality. A complete course of ecological study must include the protection of animal husbandry environment in its contents.

#### D. Research on Contaminated Feed, Detoxification of Contaminated Animal Products:

Reduction or elimination of pollution is the basic task of environmental protection work. Foods, grains and vegetables are not abundant in China. It is still difficult to prohibit the use of contaminated foods. Therefore, research on reducing and eliminating the toxic substances in feed and animal products should be strengthened, either physical or chemical methods may be used for treatment. In foreign countries, alkaline treatment is usually the chemical method (effective for removing BHC and to transform DDT into DDE, DDDE, etc., but not effective for cyclopentadiene insecticides or PCBS). Physical detoxification methods include absorption and processing. The major method of removing insecticide residue in milk products, mixed feeds, most feed materials, and animal products is physical removal, such as removing the skin or reprocessing, washing with water, distillation, cooking, etc. Washing with water may remove many types of insecticides. Volatilization or distillation is the major technique for eliminating residues of organochloro insecticides. Physical removal methods are the object of study of many scientists in foreign countries. It should also be developed as a field of research in China in order to reduce the quantity of the long-lasting type insecticides in the ecosystem and their redistribution in the human food chain.

Another method of reducing pollution is to utilize the principle of accumulation, excretion and degradation of insecticide contents of feed in the body of the animals. For example, contaminated feed may be used to raise nonedible animals or early stage of growth of domestic animals and may not be used in the late stage or may be substituted with feed not as contaminated so as to reduce the effect of insecticide on the sanitary quality of animal products.

E. Research on the Effect of Environmental Pollutants on the Immune System of Domestic Animals:

Veterinary medicine is often a breakthrough in human medical research. From the effect of environmental pollutants on the immune system of domestic animals the effect on human immune system may be derived. In the past, the major concern for environmental pollutants was the direct toxic action (inducing clinical symptoms or death); therefore, the majority of studies were to determine the disease process and the toxic mechanism in pharmacological or pathological aspects, not until the past 10 years have some problems related to indirect toxicity of these chemicals or to clinically obscure contacts with these chemicals attracted attention. With some chemicals, a low dosage contact can induce in the body of the host various complex changes, including changes of a nature of immune response. According to certain reports, environmental pollutants can change a specific link or several links of the immune response process and hence interfere with the entire immune response of the host. For example, organochloro insecticides can increase the sensitivity of domestic animals to microbes, chick filaria (capable of spreading blackhead disease), duck hepatitis virus, etc., causing infection and death. Organochloro insecticides can reduce plasmacytes in the lymph node in the back of the knee, the cell nucleus of the spleen, and suppress the skin sensitivity to tuberculin in rabbits. Presently, the incidence of cancer in China is rising. Whether or not this is due to the change of immune response by environmental pollutants still awaits future studies.

In conclusion, research on the protection of animal husbandry environment is an extremely urgent task, the areas of research are numerous. Animal husbandry environmental protection technology of a modern scientific level should be established to struggle side by side with the environmental protection teams of water, soil, crops and the industrial "three-wastes." China's research on agricultural environmental protection is new and research on animal husbandry environmental protection has just begun. The Environmental Office of the Bureau of Science and Technology of the Ministry of Agriculture is taking the lead to organize this field of research and some definite achievements in laying a foundation have been obtained. But in terms of scale, technical level, and equipment condition, the need still cannot be met. The current problems urgently in need of resolution include an increase of manpower, instruments and equipment, the establishment of a national research center, and an improvement of the research level so that the research on animal husbandry environmental protection will become a constituent part of China's agricultural environmental protection research to enrich and perfect the research work.

6248

CSO: 5000/4100

## SAFE, RATIONAL WAYS TO USE PESTICIDES EXPLORED

Guangzhou HUANJING [ENVIRONMENT] in Chinese, No 8, 1982, p 13

[Article by Hao Ruyi [6787 1172 0001]: "Skillfully Apply Pesticides, Manage Comprehensively"]

[Text] Since the invention of pesticides, people have polluted the environment while struggling against plant diseases and pests to seize bumper harvests. In particular, because some insects become gradually immune to the properties of pesticides and build up resistance, and because people lack scientific knowledge, large amounts of chemicals have been used. This not only causes environmental deterioration, poisoning by farm chemicals in production has also occurred. Before other preventive and control methods can replace pesticides, are there ways to reduce environmental pollution and strengthen the effect of exterminating insects? The answer is yes.

First, let us present some figures: The Daqiao Commune in Dafeng County in Jiangsu Province used 112 tons of agricultural chemicals in 1976, in 1981, it used only 32 tons. The content of organic chlorine in water measures in 1976 was 28 micrograms/liter. By 1981, this had dropped to 2.8 milograms/liter. The content of organic chlorine in the soil measures in 1976 was 0.15 micrograms/gram, and by 1981, this had dropped to 0.03 microgram/gram. Daqiao Commune is a cotton producing region. Last year, it not only used the least amount of pesticides, its yield of cotton was also the highest. Because the application of pesticides was scientific and rational, the commune has stopped incidents of poisoning in production consecutively for 6 years. The rate of occurrence of various types of disease dropped, and the various physiological and biochemical indices of the human body have visibly improved.

The achievement realized by the Daqiao Commune was mainly due to the continued summarization and popularization of safe and rational use of pesticides since 1975 and comprehensive measures to prevent and control cotton diseases and insects. After more than 6 years of repeated practice and summarization, they have summarized these measures into "five selections":

The first is the rational selection and use of different pesticides. In the past, large amounts of 1605, 1059, DDT, GHC and such extremely toxic or high residual pesticides were used. Although the results of controlling insects were good, they seriously polluted the environment. Their toxicity to the human body was also high. While killing insects, they also killed 70 percent of the natural enemies of the harmful insects. Later, the commune gradually changed to the use of chlorodifon, dichlorvos, trichlorfon, chlordimeform,

furadan and such highly effective and low toxic and low residual varieties. The effect of controlling insects was still maintained at about 90 percent but the rate of killing the natural enemies of harmful insects dropped to below 20 percent, and damage to the human body and the environment was also reduced.

The second was the rational selection and preparation of low and effective concentrations of chemical solutions. In the past, commune members lacked scientific knowledge. They believed that the higher the concentration of the chemical solution, the more visible the effects of killing insects. As a result, the natural enemies of the harmful insects were also killed, and frequently, the person applying the pesticide suffered from poisoning. After repeated trial and use, low but effective concentrations of various types of agricultural chemicals that could prevent and control diseases and insects were found. The dilution of chemical solutions dropped from 1:1500-2000 in the past to 1:3000-5000, and this was quickly popularized throughout the commune.

The third was the rational selection of the frequency of application and dosage of pesticides. The number of harmful insects and their natural enemies were frequently surveyed. Whenever natural enemies or other comprehensive measures could be used as little as possible to reduce the frequency of application and to reduce the area sprayed. According to statistics, this measure alone reduced the amount of pesticides used by 50 percent.

The fourth was the rational selection of the time of application. Aimed at the characteristic that poisoning by pesticides easily occurs during high temperature seasons, Daqiao Commune implemented a schedule for applying pesticides of "two early applications, two late applications, one extension," i.e., applications were carried out early in the morning and ended early, applications were carried out late in the afternoon and ended late, and the noon time rest period was extended. This was to prevent the easy evaporation of pesticides under the hot sun and in high temperature environments and lessen the ease of the human body to absorb the chemicals and cause poisoning.

The fifth was rational selection and use of the method of application of pesticides. Among the various ways to apply pesticides, dusting pollutes the environment and the human body the most seriously, followed by spraying. The scattering of poisoned soil is safer. Accordingly, they never dusted when spraying could be used, they never sprayed whenever scattering poisoned soil could be used. Now, Daqiao Commune has virtually abandoned the method of dusting.

After implementing the production responsibility system, Daqiao Commune further strengthened the work to control insects and prevent poisoning: 1. It has popularized the knowledge of using pesticides and preventing poisoning to every household. 2. It has insisted on unified purchases and storage of pesticides by the production teams. 3. Dilution of pesticides is done uniformly by the production teams for distribution to the families and the solutions are used up in the same day. 4. It has purchased and used equipment to protect the workers and the individual spraying the pesticide well.

9296

CSO: 5000/4076



## REASON FOR BAN ON PRODUCTION, USE OF BHC DISCUSSED

Guangzhou HUANJING [ENVIRONMENT] in Chinese, No 8, 1982, p 14

[Article by Zhang Yourong [1728 2589 1369]: "Good-bye BHC"]

[Text] Recently, the Ministry of Chemical Industry followed the directive of the State Council and decided to gradually stop the production and use of the pesticide benzene hexachloride within 3 to 5 years. This insecticide which has been the arch enemy of harmful insects and which has served well to protect people's health will soon end its historical mission and part.

Why are we discontinuing the production and use of the pesticide BHC? We must begin by talking about its chemical structure. The chemical name of BHC is benzahex, also called hexachloride cyclohexane, it is an organic insecticide. Its industrial products contain eight types of isomers. The propyl BHC is the strongest insecticide. The insecticide BHC consists of a benzene ring structure connected to six hydrogen atoms and six chlorine atoms, forming a very stable stereo structure. Therefore, BHC does not easily decompose under high temperatures, sunshine and acidic conditions. This property enables it to remain and accumulate for long periods in the soil after it is sprayed and thus pollute the environment. Some people have determined that if a 95 percent concentration of BHC is used, its residual period can last from 6 to 10 years. This causes agricultural crops and animals that consume agricultural crops to have a high concentration of organic chlorine. Experiments prove that the content of BHC in pork is about two times that in rice, and the content of BHC in eggs is three times that in rice while its content in milk is nearly four times that in rice. When people consume polluted foods, chronic poisoning occurs gradually in the human body, causing damage to the liver and kidney and may be accompanied by anaemia, physical weakness, and the obstruction of sensory perception. In more serious cases, BHC can also enter the fetus or infants through the placenta and milk from the mother's breast, causing deformed babies or affecting the growth of infants.

The pesticide BHC has been used for over 30 years as an insecticide. It has been used to kill insects, preserve food grain crops, guarantee harvests, and eliminate diseases. But, as time passes, many harmful insects have gradually become immune to the pesticide and the effectiveness of BHC as an insecticide has weakened. According to measurements, the immunity of the household fly to BHC has increased 20,000 times, and the immunity of the paddy rice borer has

increased 20 times. Because the effects are poor and because people want to increase the effectiveness of the chemical, they have increased the concentration and the dosage of the pesticide, and this brings about a stronger immunity in harmful insects. The residual concentration of BHC accumulated in the soil becomes higher, and the threat to mankind becomes greater, forming a vicious cycle. According to reports, the residual traces of BHC in food grains, edible oil, meats, eggs, tea, fruits, vegetables in many regions of China have exceeded the standard. In the fat of some people, the content of BHC has also been found to exceed established health standards. Therefore, it is necessary and beneficial for our nation to stop the production and use of the farm chemical BHC within 3 to 5 years.

9296

CSO: 5000/4076

PESTICIDE POLLUTION POSES HEALTH THREAT IN ZHANJIANG PREFECTURE

Guangzhou NANFANG RIBAO in Chinese 12 Oct 82 p 2

[Article by Ning Chuansheng [1337 0278 5116] Peng Yerong [1756 5509 2837]

[Text] Recently we visited Zhanjiang Prefecture, many people told us that some communes and brigades have misused pesticides, seriously polluting the ecological environment and food products and threatening the health of the people.

According to a survey of related departments of the prefecture, the Zhanjiang Prefecture People's Hospital and Zhanjiang Municipal People's Hospital, from 5 May to 7 June, have rescued 24 persons from acute poisoning caused by eating vegetables polluted by pesticides. A female worker of the Zhanjiang Candy Plant bought a melon from the market on 22 May, she took it home and cut a piece to make soup. After she ate the soup, she felt dizzy, nauseous, and numbness of the mouth and tongue. She was revived only after she was sent to the prefecture people's hospital. Similar incidents have happened in other counties causing the people to feel uneasy, many persons did not dare buy vegetables and meat from the market for awhile.

Application of chemical pesticides to prevent and control agricultural diseases and pests has had an important function in developing agricultural production and guaranteeing bountiful harvests. In recent years, some communes and brigades have applied chemical pesticides carelessly and increased the amount of application suddenly in huge quantities causing the ecological environment and agricultural by-products to become increasingly polluted. According to statistics, in 1952, there were only 730,000 mu of disease and pest damaged acreage in Zhanjiang Prefecture, 28 tons of chemical pesticides were applied. In 1971, there were 11,620,000 mu of damaged acreage and 9,547 tons of pesticides were applied. In 1981, the pest and disease damaged acreage continued to increase and pesticide application increased suddenly to 29,937 tons. During the first half of this year, the quantity of pesticides used increased 24.1 percent compared with the same period last year. Of the nearly 30,000 tons of chemical pesticides sold last year, two-thirds belong to the organic chlorine type (1605, BHC mixtures) capable of staying in the bodies of plants and animals for a long time, have latent chronic toxicity, and cause serious pollution of the environment. In addition, there were nearly 1,000 tons of chlorophenyl amidine which is potentially

carcinogenic to humans and more than 300 tons of carbofuran which is extremely toxic to men and animals.

Misuse of chemical pesticides has caused serious pollution of the ecological environment and foods; residual toxicity has permeated various organic bodies (agricultural by-products). Through the food chain, they present a substantial threat to the health of mankind. The Zhanjiang Prefecture Epidemic Prevention Station inspected 181 samples of rice grain and detected organic chlorine residues in 68 samples; of these 41 samples contained residues beyond the permissible limit, amounting to 23 percent. The organic chlorine content of 34 samples of one county averaged as high as 4.3 mg/kg, 14.4 times the permissible limit. In the highest incident, the residue content was more than 260 times the permissible limit. They inspected 36 samples of pork and detected organic chlorine residues in 28 of these, amounting to 78 percent. In view of this condition, if misuse continues, one hardly dares to imagine the effects.

In order to prevent pesticides from polluting the ecological environment and to protect the health of the people, related departments of Zhanjiang Prefecture suggested and appealed to people's governments of all levels to adopt forceful measures to resolve the problem of environmental and food pollution of pesticides immediately. They believe that first the sale and use of highly toxic chemical pesticides should be controlled. Application of highly toxic pesticides or those leaving large quantity of residues on such crops as fruits, vegetables, tea, and Chinese traditional drugs should especially be forbidden. Second the work of managing pesticides should be seriously carried out to prohibit private sales and purchases of insecticides. The department in charge of the pesticide business should be made responsible for teaching the commune members how to use pesticides. Third comprehensive prevention and control measures should be earnestly carried out to protect the ecological balance of farms and to practice pest control with insects and microbes so as to gradually reduce the quantity of application of chemical pesticides. In this manner, the misuse of chemical pesticides may be gradually controlled.

6248  
CSO: 5000/4110

DESTRUCTION OF SCENERY REQUIRES ESTABLISHMENT OF ENVIRONMENTAL MANAGEMENT LAWS

Beijing HUANJING BAOHU [ENVIRONMENTAL PROTECTION] in Chinese, No 8, 1982, pp 25-27

[Article by Luo Dianrong [5012 0368 2837] and Deng Jianxu [6772 1696 3563]: "Some Suggestions To Improve Scenic and Tourist Cities"]

[Text] Hangzhou, Suzhou and Guilin are world famous for their scenic beauty and their cultural artifacts, they are precious pearls imbedded in the land of China. Beautiful scenery and brilliant cultural relics can enrich people's spiritual and cultural life and stimulate the sense of patriotism towards the socialist motherland. Famous scenic spots are favorable conditions to develop our nation's tourism, it can create foreign exchange revenue for the nation, it can also promote friendly relations between our people and the peoples of other nations. In 1979, our nation promulgated the environmental protection law, it clearly stipulates that "tourist attractions and ancient ruins" are included in the scope of environmental protection. Last February, the State Council promulgated "the decision to strengthen environmental protection work during the period of national economic readjustment" that also clearly states: "Hangzhou, Suzhou and Guilin are our nation's famous scenic tourist cities, they must be well protected. Concerned provincial (autonomous region) and city people's governments must regard the protection of these three scenic areas as important work, make plans according to the nature and characteristics of these scenic tourist cities, and manage them strictly. We must adopt effective measures, prevent pollution, stop the destruction of natural scenery, and gradually restore the scenic spots that have been destroyed." Therefore, strengthen the system of environmental law and protect scenic tourist attractions well, cultural relics and ruins are an important link in the protection and construction of scenic tourist cities.

At present, the scenic tourist attractions and cultural relics of several cities have been seriously destroyed. According to surveys conducted by concerned departments in 1979, a total of 144 hostels, convalescence homes, hospitals, factories, dormitories, offices, guest houses, temples, gardens and buildings have been built inside the scenic areas of Hangzhou. They occupy a total of more than 3.59 million square meters of scenic area. Of the 10 scenic spots of West Lake famous in the past, only seven remain, many ancient temples have been destroyed. Suzhou has always been famous for its parks. In 1956, there were a total of 188 garden courtyards, now,

only 16 gardens are opened to the public, most of the others have been occupied by factories and units. The area of public parks being occupied and destroyed has reached 1,141.5 mu, the area of fruit gardens occupied and destroyed has reached 174 mu, the area of forest land occupied and destroyed has reached 611.5 mu. Many of the mountain peaks along the two banks of Lijiang from Guilin to Yangsuo have been defaced by people who quarried the mountains, destroying the beautiful scenery. The bodies of water in these cities have been seriously polluted. Suzhou City has many crisscrossing rivers, and is known as the Venice of the Orient. But, each day, the amount of sewage from production and living released is 190,000 tons, causing serious pollution of surrounding river water. The amount of sewage from production and living released each day amounts to over 400,000 tons, and over 3,000 tons are released into the West Lake. Lijiang in Guilin City originally was clear enough to see the bottom of the river and the number of fish swimming in the water could be counted, now the river is polluted, the water quality is turbid, and its beauty is being gradually lost. During the past 2 years, these cities have taken some measures against factories that cause serious pollution. They have controlled the destruction of scenic tourist attractions and cultural relics, but there has not been a fundamental change in appearance.

The pollution in tourist cities and the destruction of scenic tourist attractions, and cultural relics and ruins are inseparable from the unsound legal system in our nation.

For many years, because of the interference of leftist ideology, urban construction plans were not established according to legal procedures, they were not reviewed and approved by the authorities and made public as legal documents so that they carried legal authority and stability. Conversely, they were decided and their direction was determined by only a few people. The Guilin city development plan drawn up in 1960 proposed to "build Guilin into a ...modernized industrial city". During the "cultural revolution" plans departed from developing scenic tourist cities; consequently, heavy industry and chemical industry constitute a large proportion. Factories abound in Hangzhou City, each day, the amount of industrial waste gases released is 1,500 cubic meters. Suzhou City has 21 chemical factories that cause serious pollution surrounding the city. The waste water released by 13 large dyeing and printing factories are inside the city limits, three large paper manufacturing plants are at the upper reaches of the water source, 42 electroplating shops are spread throughout the city. Blindly developing industries not in line with the characteristics and demands of a tourist city, the large proportion of heavy industries and chemical industries that consume a lot of energy and release a lot of pollutants, and their irrational distribution have brought about many difficulties for environmental protection work in these cities.

II. In recent years, the people's governments of the various scenic and tourist cities have paid more attention to using legal means, and have separately established some management regulations according to the characteristics of the locality, issued many notices and announcements, but some are not consistent with the actual circumstances, the stipulated penalties could not be coordinated with related "criminal laws", "environmental protection laws", "public security management and penal codes". Among the factories and units not directly subordinate to the local leadership, some make excuses and obey

only the higher leadership that they see fit, they do not respect the decisions made by the local people's government, and this has created more difficulties for implementing local government decisions to move units that want to occupy scenic locations elsewhere. Propaganda of the legal system has been carried out carelessly and in a perfunctory manner, becoming a mere formality. Propaganda efforts have not fully developed their role in legal education and monition.

III Some laws do not clearly define the scope of protection and the means of protecting objects in scenic and tourist cities. "Yangsuo has numerous scenes, every body of water and every mountain are fascinating." But, exactly how many scenic spots are there in Yangsuo, many of them have not yet been zoned, and cannot be legally protected. Even though some scenic areas have been zoned, administrative barriers have not been broken, and the scenic areas cannot be completely protected. For example, the Ludiyan in Guilin City is under the jurisdiction of Guilin City, but the Ludiyan scenic area is on the border of Guilin City and Lingchuan County. Last year, Guilin City adopted measures to protect the mountains and forests, but the mountains opposite the mouth of the cavern at Ludiyan are still being quarried, destroying the natural scenery. The reason is that the mountain top is within the jurisdiction of Linchuan Xian and Guilin City has no jurisdiction over it.

Although Article Six of the "Constitution" stipulates that "mineral deposits, waterflow, national forests, wasteland and other marine and continental resources belong to all the people", some cadres and members of communes, brigades and production teams believe that the ownership of all rivers, lakes, ponds, mountain ranges, rock caverns etc. under their management belong to them. They believe they have the right to completely occupy, use, benefit from and control them, they have the right to quarry the mountains, fill the ponds and fell trees, and blast holes to quarry. Especially after implementing the production responsibility system, this situation has worsened.

VI. Scenic and tourist cities have a higher demand for environmental quality than ordinary cities. They have more environmental resources and cultural and historical relics. The amount of work is large but the strength of the environmental protection departments, gardening and forestry department and cultural relics departments cannot meet the requirements. At present, the wards in Hangzhou and Guilin cities have not established environmental protection departments. Although the wards in Suzhou City have established environmental protection departments, they only have two or three cadres, and they are frequently transferred to other places to work. The Suzhou City Cultural Artifacts Management Committee has only 8 people, including the leadership. It has to conduct general surveys of cultural artifacts and ancient ruins throughout the city, protect them, repair and manage them, as well as manage maintenance and construction, the purchase of materials, organization and coordination of labor forces of cultural relics protection units, it is difficult to meet the needs in work.

In view of the above-mentioned facts, we propose:

I. The Standing Committee of the National People's Congress should quickly draw up and establish environmental management laws for scenic and tourist cities according to the characteristics and requirements of future development for scenic and tourist cities on the basis of summarizing the positive and negative experiences in the management of urban construction of scenic and tourist cities of over 30 years since the founding of the nation. The city people's congress or the standing committee of the city's people congress of the various scenic and tourist cities should establish or revise the cities' development plans according to the direction of development and management requirements specifically pointed out in the above laws and regulations and combine them with local characteristics. They should establish bylaws for those cities to implement the national scenic and tourist city environmental management laws. This not only will improve the legal status and the authority of the management and construction departments of every tourist city, this will also present more concrete demands upon every tourist city, and this will greatly improve the speed of development of the managerial and construction standards of each tourist city. Next, the establishment and the revision of urban construction plans that will serve as the blueprint for urban construction will be free from the ideas of only a few people who use administrative means to replace all other procedures and will be able to follow legal procedures. In this way, the authority of urban construction plans can be elevated, and their stability can be maintained. Then, we can avoid treating the symptoms but not the disease, issuing excessive and arbitrary "regulations" and "decisions" that are difficult to implement, and ending up with nothing. Having a nationally unified management law and local bylaws for implementation would facilitate centralized propaganda and also facilitate unified implementation, and it is easier to "follow available laws, absolutely obey the laws, execute the law strictly, and pursue the responsibility for violation of the law."

II. Scenic areas and points must be rezoned on the basis of general surveys. Their zoning should not be limited by administrative regions in order to guarantee the integrity of the scenic regions and points. After zoning, markers must be erected to indicate the boundaries and sites, and files must be established. The state ownership of rivers, lakes and ponds, mountain ridges, gardens and forests, caverns, cultural relics in scenic regions must be specifically stipulated in the national scenic and tourist city environmental management laws to further clarify their legal position. The concrete measures surrounding every protected object must be stipulated in the bylaws and specific legal articles must be carved on the boundary markers to prevent damage. Protective groups of a mass character must be established around the objects to help the functional departments do their work.

III. We should make the organizations and the agencies sound and strictly implement the law. Because the scenic and tourist cities have a higher demand for environmental quality, because they have famous scenic spots and because the amount of protection and management work is large, we must further make sound the organizations and the agencies of these units, and suitably strengthen them. We must propagandize the legal system in depth and persistently, improve the self awareness of cadres and the masses to obey the law. Those who destroy scenic attractions and cultural relics must be severely dealt with according to law.

9296  
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REASON, USE OF POLLUTION CHARGES EXPLAINED

Beijing HUANJING BAOHU [ENVIRONMENTAL PROTECTION] in Chinese, No 7, 1982, pp 2-3

[Interview with Comrade Gao Yusheng [7559 1342 5116], deputy director of the Beijing City Environmental Protection Bureau: "Some Questions About the Implementation of the 'Provisional Measures for Levying Pollution Charges' Promulgated by the State Council"]

[Text] Recently, the State Council promulgated the "Provisional Measures for Levying Pollution Charges." In order to better implement the above measures, Beijing City drew up "the method to implement 'the provisional measures to levy pollution charges' promulgated by the State Council" which will take effect 1 July. We visited Comrade Gao Yusheng [7559 1342 5116], deputy director of the Beijing City Environmental Protection Bureau and asked him to answer some related questions.

[Question] What results have been realized in levying pollution charges since its implementation last year in the city?

[Answer] Beijing City began to levy charges for the release of smoke and dust in April of last year. It began to levy charges for the release of sewage water beginning in June. It has only been a year but visible results have been realized in promoting environmental management and treatment of polluting sources. Last year, over 800 units submitted charges for the release of pollutants. Over 200 units reduced the release of pollutants after treatment and did not submit any charges or submitted lower fees. There were over 60 units that did not have to submit any fees. Throughout the city, over 200 key projects in treating the three wastes were carried out, an increase of nearly onefold over 1980. The pollution release fees collected have already been used to subsidize 53 projects to treat polluting sources. To a definite degree, this has solved the problem of insufficient funds for treating pollution at some units. More importantly, because of levying pollution charges, the leaders of the enterprises and business units are now paying more attention to environmental protection work. Leaders of some enterprises have taken the initiative to visit the environmental protection departments of wards and counties to ask them about the methods for treating pollution. Some units sent people to other places to learn and added facilities to treat pollution. For example, the Beijing Special Steel Mill had always been slow in environmental protection work in the past. The plant leadership also believed that it was a difficult task. Last year,

under the pressure of having to submit pollution release charges, it reorganized the environmental protection agency, transferred efficient cadres to the environmental protection department, established a network throughout the plant for environmental protection work, established environmental protection plans and working regulations, and during the past year, progress in environmental protection work accelerated. This plant had a total of 110 polluting sources. From 1973 to 1980, only 11 were treated in those 8 years. But last year, the plant collected a fund of 660,000 yuan by itself and treated 48 polluting sources. Before levying pollution charges, the Beijing Coking Plant estimated that each month it would have to submit 300,000 yuan in pollution charges, arousing the attention of the plant. They established an environmental protection responsibility system, further perfected the treatment facilities, improved the results of treatment, reduced the release of pollutants, and by the time pollution charges were levied, each month the plant only had to submit over 60,000 yuan. This year, the plant will strive to treat its sewage so that it will meet the standards for the release of sewage.

[Question] Why are pollution charges levied? Some people say the purpose of levying pollution fees is for the environmental protection departments to acquire more capital, is this correct?

[Answer] The "provisional measures for levying charges for the release of pollutants" promulgated by the State Council clearly state, "the purpose of levying pollution charges is to stimulate enterprises and business units to strengthen administration and management, conserve and comprehensively utilize resources, treat pollution, and improve the environment." The results of implementing the method of levying pollution charges in Beijing I mentioned at the beginning are consistent with this goal. Theoretically speaking, paying pollution charges is a kind of compensation for social losses created by polluting units. But the purpose of levying pollution charges by the state is not to let enterprises pay for the little loss but to promote business management, rational utilization of resources and energy, and the reduction of pollution. When more pollutants are released, more resources are wasted. By levying pollution charges, the enterprises are forced to include the goals of controlling environmental pollution in the economic responsibility system, to improve management, to develop comprehensive utilization of sewage, waste gases and waste slag, and to treat pollution. The view that levying pollution fees is only a way for the environmental protection departments to gather funds is completely mistaken.

[Question] What is the money from the levy of pollution charges being used for and how is it being used?

[Answer] The State Council stipulated that "the pollution charges collected must be included in the budget." This shows, the pollution charges collected do not belong to the income of any unit, they are the income of the state. The State Council also stipulated that this money will be used as funds to subsidize environmental protection and will be used as a special fund for that particular purpose. This shows that the money can only be used for environmental protection and it cannot be used for other purposes. This shows that the money is only a "subsidy" fund. Polluting units cannot use this money as the main source of capital for environmental protection.

The scope of environmental protection is broad. This money must mainly be used to treat polluting sources and comprehensive prevention and control of environmental pollution. It cannot be a fund for everything. The methods for implementing the State Council's "provisional measures of levying pollution charges" in Beijing City stipulate that 80 percent of the money should be used to subsidize the treatment of polluting sources of key polluting units, 15 percent of the money should be used to subsidize comprehensive treatment of environmental pollution, 5 percent of the money should be used to subsidize the purchase of monitoring equipment by environmental protection departments and to subsidize expenditures in collecting pollution charges, but the money should not be used to build office buildings, dormitories, as monetary awards, for workers' benefits and such non-operational expenditures. Everyone of us is responsible for managing and using this part of the money well.

[Question] After the polluting units submit their pollution charges, are they free from making any investment in treating pollution and do the environmental protection departments have to be responsible for providing funds to treat pollution?

[Answer] No. The methods promulgated by the State Council clearly stipulate: The submission of pollution charges by the polluting units does not exempt them from the responsibility of treating pollution, the responsibility of paying for damages and other legal responsibilities. I have mentioned before, the submission of pollution charges is only a compensation for social pollution brought about by the polluting units. The responsibility for treating pollution still rests with the polluting units.

According to the regulations stipulated by the State Council, the use of this money as a fund to subsidize environmental protection should be regarded as a kind of support for actively treating pollution. We must never believe that since the environmental protection departments have collected pollution charges that the environmental protection departments should treat pollution for us.

[Question] What are the differences among pollution charges, compensation for pollution, and fines?

[Answer] Pollution charges, compensation for pollution and fines are completely different. The State Council stipulates that all enterprises and business units that release pollutants exceeding the standards stipulated by the state must be subjected to the levy of pollution charges. But, the amount of pollutants released over the standards not necessarily causes serious economic loss directly. The polluting unit has to pay compensation only when serious loss has been incurred directly. The compensation does not reduce or exempt the unit from submitting pollution charges it owes. For example, the amount of sewage released by some factories has exceeded the standards stipulated by the state. They must pay pollution fees, but this sewage has flowed into fish ponds and has caused the death of several dozen thousand jin of fish. Besides paying the pollution charge, they should also pay for the loss of the several dozen thousand jin of fish.

Fines are a means of punishment for not implementing the state's regulations. Under ordinary situations, fines are not levied. For example, Article Five of the methods of implementation promulgated by the city government stipulates that multiple fees must be levied on construction projects that do not implement the regulations of "the three simultaneous efforts" established by the state, that do not use available pollution treatment facilities, that do not complete treatment projects according to schedule, that use improper methods such as dilution to release pollutants, that use infiltration wells and infiltration ditches to release poisonous and harmful waste water. When such violations are serious, fines are levied. Fines do not exempt them from the responsibility of paying pollution charge and compensation for loss.

[Question] How should polluting units correctly treat and implement the "provisional measures for levying pollution charges"?

[Answer] First, treatment of the polluting source must be hastened so that the units need not pay a charge or so that they can reduce the amount of pollution charges to be submitted. This truly coincides with the purpose of levying pollution charges. Second, the polluting points of one's own unit must be conscientiously monitored. Those units that do not have the ability to monitor pollution can invite other units to monitor pollution for them, and the pollution of one's own unit must be truthfully reported to the environmental protection departments and their superior departments. Third, units must honestly submit monthly pollution charges to environmental protection departments of the wards and counties where the units are located. They must be law abiding. Units must not think of ways to reduce the amount of pollution charges they are supposed to submit. They should think of all ways to treat pollution so that the environment is protected, the people will benefit, and the units can pay less or be exempt from paying pollution charges. Only in this way can the state, the unit and the individual benefit. Only this attitude coincides with the spiritual civilization of socialism.

9296

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BEIJING'S MEASURE TO FURTHER CRACK DOWN ON POLLUTION OFFENDERS

Beijing HUANJING BAOHU [ENVIRONMENTAL PROTECTION] in Chinese, No 7, 1982, pp 4-6

["Beijing City's Method To Implement the 'Provisional Measures to Levy Pollution Charges' Promulgated by the State Council"]

[Text] Article 1. This measure is drawn up according to the "Provisional Measures to Levy Pollution Charges" promulgated by the State Council.

Article 2. All enterprises and business units in the Beijing area should implement the standards stipulated in the "Trial Standards for the Release of the Industrial 'Three Wastes'" promulgated by the state. Standards for the release of pollutants in Beijing City that have been promulgated by the People's Government of Beijing City previously shall be changed and replaced by the standards for the release of pollutants in Beijing City.

Enterprises and business units that have released pollutants exceeding the above standards shall be subjected to the levy of pollution charges. Other polluting units are subjected to boiler smoker and dust pollution fees.

When a polluting unit submits pollution fees, it is not exempt from its responsibility to treat pollution, to compensate for damage, and other legal responsibilities.

Article 3. The standard for levying pollution charges shall be implemented according to stipulations in the accompanying table of this measure.

If sewage, waste gases and waste slag released by a polluting unit contain two or more harmful substances from the same polluting source, the fee shall be calculated according to the highest levy.

Article 4. Polluting units that still do not meet the standards for release of pollutants after submitting pollution charges shall be subjected to a 5 percent higher levy each year starting from the 3rd year after the first levy is imposed.

Polluting units that have treated pollution, that have strengthened management, that have met the standards for release of pollutants or that have visibly reduced the amount and the concentration of pollution can request the environmental protection departments of the ward or county where they are located for an exemption or a reduction of the levy. After verification, the levy shall be terminated or reduced starting from the day the request is submitted.

Article 5. Multiple fees shall be levied on units described in any one of the following, in serious cases, the units involved can be subject to fines:

1. Newly built projects, expansion projects, reconstruction projects which have been completed and have begun production, engineering projects for developing potential, renovation and improvement, that have released pollutants exceeding the standards after promulgation of the "Environmental Protection Laws (trial) of the People's Republic of China";
2. Units that have existing pollution treatment facilities but do not operate them or that have dismantled them without approval and that have released pollutants exceeding the standards;
3. Units that have not completed the treatment projects assigned by the state, the city, the ward and the county within schedule without appropriate reason and that have released pollutants exceeding the standards;
4. Units that use improper means such as dilution to release pollutants or make false reports on the release of pollutants;
5. Units that use infiltration wells, infiltration ditches to release poisonous and harmful sewage.

Units described in cases 4 and 5 must immediately correct their practices or must stop using such means within a time limit, and they are also subject to a levy of pollution charges not over 5 times the standard fee if the pollutants released by them do not exceed the established standards.

The ward and county environmental protection departments shall determine those units subject to fines of less than 2,000 yuan. Those units subject to a fine of 2,000 yuan to 20,000 yuan shall be reported by the ward and county environmental protection departments to the people's government of the ward and the county for review and approval. The city people's government shall authorize the environmental protection bureau to review and approve those units subject to a fine of 20,000 to 50,000 yuan. The city environmental protection bureau shall report those units subject to a fine of over 50,000 yuan to the city people's government for review and approval.

Those units that continue to violate these regulations after being fined shall be subject to continued heavy fines.

Article 6. All units involved in the manufacturing, processing and sale of industrial furnaces, boilers and tea curing furnaces must equip them with smoke and dust removal devices. All units that do not equip such furnaces with smoke and dust removal devices and when the smoke and dust released by such furnaces exceed the standards, the manufacturing, processing and sales units shall be ordered to cease production, processing and sale. The furnaces already sold shall be subject to a fine equivalent to 10 percent of its sale price.

Article 7. Pollution charges shall be collected by the environmental protection departments of each ward and county by the month. All polluting units, regardless of their subordinate relationship and ownership relationship, shall truth-

fully report to the environmental protection departments of their own localities and according to regulations the type, the quantity and the concentration of pollutants released. After verification by the environmental protection departments of the ward and the county, a notice specifying the fees due shall be sent to the polluting units as reference for levying and collecting pollution charges.

The data reported by the polluting units shall be supervised by the units themselves. They can also request other units to supervise such data. The environmental protection monitoring stations of the ward and the county shall have the authority to conduct spot checks. When either party disagrees with the monitored data, the city environmental protection monitoring center shall mediate.

Article 8. Notices for paying charges shall be sent out before the tenth of each month. Polluting units shall pay their pollution charges to the environmental protection departments of the ward and the county where they are located within 10 days after receipt of the notice for paying the charges. Those units that do not pay such fees (including fines) within the specified period shall pay a daily interest of 0.1 percent. The environmental protection departments of the ward and the county can prosecute before the people's court those units that have delayed payment for 3 months.

Article 9. The pollution charges submitted by enterprise units can be included as an expenditure of production cost. The portion of the fee over the standard fee and fines paid by enterprises belonging to the system of ownership by the whole people shall be listed as an expenditure from profits kept by the enterprises or from the capital funds of the enterprises. The portion of the fee over the standard fee and fines paid by enterprises of the system of ownership of the whole people and enterprises of collective ownership that practice "conversion of profits into taxes, independent accounting, bearing their own profit and loss" shall be listed as an expenditure of the profit after taxes. The pollution charges and fines submitted by business units shall be listed as expenditures from the remaining balance of funds for contract work performed by the unit and funds not included in the budget. If such funds are not sufficient to pay the fees and fines, such fees and fines can be included as expenditures from the business fund of the unit.

Article 10. The pollution charges collected (including fines, the same in the following) are included in the budget as funds to subsidize environmental protection. The funds shall be managed as special funds and they are not appropriated to any system.

The pollution charges collected from polluting units subordinate to the central ministries and cities shall be submitted to the city treasury. Pollution charges submitted by polluting units subordinate to administrative bodies below the wards and counties shall be submitted to the treasury departments of the wards and counties. The collected charges shall all be listed under "other income."

Funds to subsidize environmental protection shall be uniformly appropriated and used by the environmental protection departments of the cities, wards, counties

together with the financial departments. They must insist on appropriating this special fund for special uses. The funds should first be collected before they are appropriated for use. The funds cannot be used for other purposes. If there is a remaining balance, it can be appropriated for use next year.

Article 11. The environmental protection department of each ward and county shall submit that part of the pollution charge designated for the city and collected during the current month to the city's environmental protection bureau prior to the 25th of each month so that the city's environmental protection bureau can submit the funds to the city treasury. At the same time, the environmental protection departments of each ward and county shall turn over the pollution charges collected from units subordinate to the administrative offices below the wards and counties to the treasuries of the wards and counties.

Eighty percent of the funds to subsidize environmental protection shall be used to subsidize key polluting units to treat the polluting sources. Fifteen percent of the funds shall be used to subsidize comprehensive treatment of environmental pollution. Five percent of the funds shall be used to subsidize the purchase of monitoring instruments and equipment of the environmental protection departments of the wards and counties and operating expenditures incurred in levying and collecting pollution charges. But, the funds shall not be used for building office buildings, dormitories, monetary awards and workers' welfare and such non-operational expenditures.

The last two subsidies shall be appropriated to the environmental protection departments of the city, the ward and the county each month by the treasury departments of the city, ward and county for unified arrangement and use.

Article 12. When a polluting unit arranges its projects to treat pollution, it should first carry them out using the unit's own finances. If there is indeed a shortage of funds, it can report the situation to the superior department for review and examination. After summarization, it can request the city, ward and county environmental protection departments for subsidy. Funds to subsidize environmental protection shall be appropriated once every half year. The amount of the subsidies generally shall not surpass 80 percent of the total amount of anti-pollution fees submitted by the unit subordinate to the administrative department. Units described in the first section of Article 5 and in Article 6 shall not be subsidized.

Article 13. Treatment projects arranged with funds to subsidize environmental protection shall be reviewed and approved by the environmental protection departments together with the financial departments. The funds shall be appropriated and supervised by the development bank.

Article 14. This method shall become effective on 1 July 1982.

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CSO: 5000/4073



Accompanying Table

Standards for the Levy of Anti-pollution Fees

I. Waste Gases

Table 1

Unit: yuan

Name of harmful substances	For each kilogram over the standard amount	For every 10 cubic meters over the standard concentration
sulphur dioxide, carbon disulfide, hydrogen sulfide, fluorides, nitrogen and oxygen compounds, chlorine, hydrogen chloride, carbon monoxide	0.04	
sulfuric acid (mist), lead, mercury, beryllium compounds		0.03-0.10
Powder and dust from production	glass wool, slag wool, asbestos, aluminum compounds	0.10
	Pulverized coal from power stations, powder and dust from cement	0.02

II. Waste Water

Unit: yuan/ton of water

Harmful substance or name of object	Concentration as a multiple of the standard				
	Within 5	5 - 10	10 - 20	20 - 50	Above 50
mercury, cadmium, arsenic, lead and their inorganic compounds, hexavalent chromium compounds	0.20	0.30	0.45	0.90	2.00

sulfides, petroleum varieties, volatile phenol, cyanides, organic phosphorus, copper, zinc, fluoride and its compounds, nitrobenzene, amino-benzenes	0.15	0.20	0.35	0.60	1.00
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suspended substances					
COD, BOD, pH value	0.06	0.10	0.15	0.20	0.30

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pathogen			0.08		
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Note: When the pH value exceeds 6-9, then for each increase or decrease of 1, we use one multiple of the base number (0.06 yuan) for the amount of excess concentration within five times the standard.

Table 2

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Smoke and dust from industrial and heating boilers	Multiple over standard	Within 4	4.1-6	6.1-9	Above 9
	Ringelmann smoke chart	2d	3d	4th	5th
	Fee per ton of fuel (yuan)	3.00	4.00	5.00	6.00

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- Note:
- (1) Smoke released from steam locomotives and other mobile polluting sources are temporarily not subjected to the levy of pollution charges.
  - (2) Pollution charges for waste gases released by thermal power stations, industrial and heating boilers shall be temporarily levied according to the present fees levied for the release of smoke and dust. Fees are not levied temporarily on other harmful substances.
  - (3) Pollution charges for smoke and dust released by industrial furnaces and tea curing furnaces follow the standards of fees for smoke and dust released by "industrial and heating boilers."

III. Waste Slag

Unit: yuan

Name of harmful substances	Per ton of waste slag dumped or released into body of water	Per ton, month of waste slag piled up without water-proof and seepage-proof measures	Per ton, month of waste slag piled up without a special place of storage
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waste slag containing mercury, cadmium, arsenic, hexavalent chromium, lead, cyanides, yellow phosphorus, and other soluble and highly toxic substances		36.00	2.00
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Pulverized coal cinder of power plants		1.20	0.10
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Other industrial waste slag		5.00	0.30
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Note: (1) Besides levying charges on units that have released or dumped extremely toxic waste slag, or have piled up extremely toxic waste slag without water-proof and seepage-proof measures, such activity should be immediately stopped and they should be told to clean the pile up.

(2) "Pulverized coal cinder of power plants" refers only to coal fired power plants that have been completed, that have begun production, that have already released such pollutants into bodies of water, and that have not built cinder yards prior to the promulgation of the "Environmental Protection Law (trial)." Other power plants (including the above power plants which have been expanded) are subject to the standards for other industrial waste slag when they release pulverized coal cinder.

(3) Units that pile waste slag in tail mine dams, ash yards, special waste slag (including waste coal rock) piling yards are temporarily not subjected to the levy.

9296

CSO: 5000/4073

ARTICLE DESCRIBES ANSHAN IRON AND STEEL COMPANY'S SUCCESS IN POLLUTION CONTROL

Beijing HUANJING BAOHU [ENVIRONMENTAL PROTECTION] in Chinese, No 9, Sep 82 pp 2-5

[Article by the Anshan Iron and Steel Company: "How the Anshan Steel Works Handles Environmental Pollution"]

[Text] The Anshan Steel Works is an old enterprise with a history of more than 60 years. Since the 3d Plenum of the 11th Party Congress, it has conscientiously implemented a series of directives and documents related to environmental protection issued by the party Central Committee and the State Council. It stressed the treatment of environmental pollution as a strategic task in implementing the principle of readjustment. It relied on its financial strength, manpower and materials, developed its potential, began from the comprehensive utilization of resources and energy, organically combined the treatment of the "three wastes," comprehensive utilization and technical improvement, closely combined the development of production with environmental protection, and realized better environmental results and economic benefits. At present, pollution of the premises of Anshan Steel Works has been preliminarily controlled. Some of the "three wastes" have been utilized. Comparing 1981 to 1977, the amount of falling dust on the premises dropped 53 percent, the amount of waste water released dropped 12.5 percent. Sixty-four percent of the work posts meet dust pollution standards, up from 42.5 percent, or an increase of 22.1 percent. The amount of sintering smoke called "the black dragon" visibly lessened. Two of the four streaks of yellow smoke called the "yellow dragons" from smelting in the top-blown oxygen open hearth furnace were eliminated. The acid content of the contaminated water of Anshan Steel Works known as the "snake" reached international requirements, and the content of phenol and cyanogen dropped significantly. The ore residue yard realized a balance of intake and output, and no longer occupied farmland and did not crowd the channel of the Sha He. While improving the environment, the company also recovered a large amount of material and heat, and comprehensive utilization of resources and energy was preliminarily realized. The whole company could retrieve 650,000 tons of gas ash, gas mud and iron dust from sintering and steel smelting a year, and 4,290,000 tons of steam (equivalent to 310,000 tons of standard coal). The percentage of utilization of recycled water reached 86.5 percent, and the amount of recycled water utilized reached more than 1.14 billion tons. The percentage of utilization of coal gas from the blast furnace and the coking furnace reached 96.44 percent and 98.51 percent respectively. The percentage of quenching by residual water from the blast furnace reached 96 percent, and over 3.2 million

tons of residual water were produced. The use of surplus hot water for heating conserved over 80,000 tons of coal, etc. From 1978 to 1980 alone, the production value of major comprehensive utilization projects for environmental protection reached more than 40 million yuan a year and a profit of more than 14 million yuan could be realized. While improving environmental pollution, production at the Anshan Steel Works also developed. A comparison between 1981 and 1977 showed that the comprehensive comparable energy consumption per ton of steel dropped 30.2 percent. Iron, steel and steel products, respectively increased 13.54 percent, 15.67 percent and 28.92 percent. The profit margin of the output value increased 6.8 percent; profits increased 45.2 percent. The productive capability of short assembly line products of rolled steel increased 120,000 tons. The percentage of short assembly line products urgently needed by such markets as the light industry also rose 15.39 percent. Product quality improved considerably, creating the best level in history. There were 29 products that were evaluated as superior quality products by the state, province and the ministry. Our methods were as follows:

I. We continued to improve understanding, and conscientiously strengthened the leadership in environmental protection work.

In recent years, environmental protection work at the Anshan Steel Works made definite progress because a fundamental prerequisite was that cadres at each level, especially leading cadres, correct their understanding of the importance of environmental protection work, and realize the fact that environmental protection work is an important component of economic construction and a fundamental task in the construction of modernization.

For a long period, environmental pollution has been very serious because of the mistaken "leftist" influence in economic work, especially the interference and sabotage by Lin Biao and the "gang of four" and the backward equipment and technology at the Anshan Steel Works. "Smoke filled the sky, and sewage flooded the ground." It became one of the major enterprises causing pollution in China. Because of environmental pollution, the physical and mental health of workers and city residents of Anshan and industrial and agricultural production were affected and damaged to a large extent. In recent years, we combined our efforts with the actual situation of environmental pollution at the Anshan Steel Works, we aimed our efforts at the ideas of some cadres who "think of producing more but think of environmental protection less;" "think of control but believe there is limited funds," "have exerted efforts to control environmental pollution but the techniques have been ineffective," which showed their lack of confidence and urgency in environmental protection work. We conscientiously studied the important directives and documents concerned with environmental protection work issued by the party Central Committee and the State Council, raised questions, talked about damage, self-consciously cleaned up the mistaken "leftist" influence of "emphasizing production and neglecting environmental protection" and acquired a further understanding of the relationship of dialectic unity between the development of production and environmental protection. We saw the favorable factors and conditions in doing environmental protection work well at the Anshan Steel Works, and we elevated our awareness and urgency to do environmental protection work well. Everyone profoundly realized that to emphasize or not to emphasize and to value or not to value environmental protection work is

a problem in improving the environment and a problem concerning the suffering of the people and masses. It is actually a political problem, it directly affects stability, unity, readjustment and hastening the construction of the "four modernizations." At the same time, we also clearly recognized that the main reason for the serious environmental pollution at the Anshan Steel Works is the backwardness of the equipment and technology and the low rate of utilization of resources and energy. To change this situation, we must closely combine efforts with the technical improvement of old enterprises, implement some environmental protection measures according to plan and step by step, vigorously develop comprehensive utilization of the "three wastes," improve the rate of utilization of resources and energy, gradually control environmental pollution, turn harm into good, and change waste material into things of value. We have clearly pointed out the guiding ideology in environmental protection work at the Anshan Steel Works: conscientiously implement the environmental protection law and related documents of the party Central Committee and the State Council, begin by improving the rate of utilization of resources and energy, closely combine technical improvements, make overall plans, rational distribution, combine prevention and control, use "waste" to treat waste, solve environmental pollution self-reliantly, realize the unity of economic benefits and environmental results so that the development of production and environmental protection can follow a beneficial cycle in coordination to create conditions for the development of production at Anshan Steel Works and to meet the needs of modernization.

On the basis of improving understanding, the company and all its plants must include environmental protection work as an important subject of the six central tasks of readjustment and technical improvement at the Anshan Steel Works (readjust the product structure, improve product quality; readjust the energy structure, reduce energy consumption; carry out technical improvement and renovation of equipment; prevent and control pollution and improve the environment; increase environmental and welfare facilities; increase educational and scientific research facilities). Environmental protection work must be included in the daily agenda of important business, leadership must be conscientiously strengthened. An assistant manager of the company should be in charge of environmental protection work, and he must be supported in manpower, materials and finance. The company has held many party committee meetings and managers meetings to specifically study environmental protection work at the Anshan Steel Works. In particular, the company's chief leaders personally expressed their concern about environmental work, personally emphasized key environmental protection projects, personally listened to reports on environmental protection, personally studied and solved difficulties and problems encountered in environmental protection work. In order for environmental protection work to thoroughly develop, the company established an environmental protection office specifically in charge of daily environmental protection work of the company. One deputy plant manager of each plant was assigned to concentrate on environmental protection work. Key polluting plants established environmental protection agencies and specialized environmental protection teams. At the same time, the company also promoted environmental management, established methods for environmental protection management, established and made sound a series of environmental protection management systems so that there would be regulations and laws for environmental protection work to follow and so that it would become more systematized and constant. At present, the company has one environmental protection

research institute, an environmental protection monitoring station, 13 environmental protection monitoring points, a general chemical plant, a general sintering plant, three large steel mills, totaling 14 key polluting plants which have established environmental protection offices. The other plants have also assigned full time personnel to be in charge of environmental protection work. The number of employees of the whole company involved in environmental protection including managerial cadres, special environmental protection teams, full time and part time environmental protection statistical personnel amounts to over 1,000 people. They have preliminarily formed a relatively complete environmental protection management system, and they have gradually included environmental protection work in the system of business management.

II. We should closely combine technical improvements, comprehensively utilize the "three wastes" continue to improve the rate of utilization of resources and energy.

Although the Anshan Steel Works has been rebuilt and expanded several times since liberation, the equipment and technological level are mostly of the 1930s to the 1950s. Whether in the comprehensive utilization of resources and energy or in the improvement of productive capability and comprehensive economic benefits, there is great potential to be developed. According to statistics, surplus heat from high temperature waste gases and coolants at the Anshan Steel Works is equivalent to 1.2 million tons of standard coal a year, accounting for 13 percent of the total energy consumption at the Anshan Steel Works. In recent years, we followed the principle of spending less money to produce quick results and to realize large benefits, began with the utilization of resources and energy, closely combined technical improvement of old enterprises, concentrated on key polluting sources and the major problems of sintering smoke, yellow smoke from smelting steel, chemically polluted water containing phenol and cyanogen, waste acidic water from rolling steel and ore and residue yards. We implemented measures to improve old equipment, readjusted the production structure and the energy structure, carried out comprehensive utilization and controlled environmental pollution according to plan and step by step. We suited measures to local conditions and digested the "three wastes" in the production process. The second measure was in depth processing of the "three wastes" to produce reprocessed goods. The third measure was to recover wastes for utilization and to develop surplus heat resources well. The fourth measure was to implement some purification measures. Since 1978, while we carried out technical improvements, we concentrated manpower, materials and financial strength to build projects for environmental protection on a large scale in stages and in groups. By 1981, we realized a total of 87 key environmental protection projects and preliminarily formed a system of comprehensive utilization of the "three wastes" on a definite scale and this enabled the rate of utilization of resources and energy to continue to improve. By the end of 1981, the percentage of treatment of waste gases at the Anshan Steel Works was 52 percent, the percentage of treatment of dust and smoke was 42 percent, the percentage of treatment of solid industrial waste was 63 percent, the percentage of utilization of recycled water was 86.5 percent, the percentage of utilization of surplus heat was 43.73 percent. The "three wastes" were used to produce more than 50 reproduced products including cement, powder for metallurgy, and rust-resistant iron oxide red. This not only improved environmental pollution, it also produced good economic benefits and provided funds for the Anshan Steel Works to treat its pollution. From 1978 to

1981, the Anshan Steel Works invested a total of more than 90 million yuan in environmental protection. The comprehensive profit from the "three wastes" contributed more than 50 million yuan, constituting 59 percent of the total investment in environmental protection. We combined technical improvements, the main methods to control environmental pollution were the following:

First, we closely combined the general technical improvement plans for the Anshan Steel Works to include environmental protection plans in technical improvement.

We established a general plan by combining technical improvement with the actual situation at the Anshan Steel Works based on the degree of pollution, technical condition and source of capital in the course of controlling pollution. We solved problems in technical improvement according to plan and step by step. In 1980, we revised the original 10-year plan and established a 5-year plan for environmental protection at the Anshan Steel Works. Since 1978, we began more than 80 environmental protection projects according to the environmental protection plan, invested more than 90 million yuan, and we realized favorable results. We also arranged 40 key environmental protection measures for 1985 and we plan to invest more than 100 million yuan. The main sources of capital will be: a percentage of profits from comprehensive utilization, about 14 million yuan a year; returned capital from pollution charges, about 10 million yuan a year; and an appropriate amount of capital converted from a small portion of enterprises. Because we have a long-range plan and specific measures, our efforts are guaranteed in capital, manpower and materials, therefore, environmental protection work has steadily progressed.

Second, we closely combined projects to develop potential, renovation and rebuilding, conscientiously implemented the regulations on the "three simultaneous efforts," and strictly controlled new pollution.

Since 1977, we insisted on simultaneously designing, constructing and major new projects, reconstruction and expansion projects for developing potential, renovation and improvement together with anti-pollution facilities. In particular, we strictly carried out designs. The designs of every measure of environmental protection were repeatedly discussed. We drew on collective wisdom and absorbed all useful ideas so that the plans were rational and the technology and the technological processes were advanced. Because we insisted on the "three simultaneous efforts," all new projects to develop potential, renovation projects and rebuilding projects basically included environmental protection facilities and realized better results.

Third, we closely combined major and medium repairs of equipment, implemented environmental protection measures, and made up for the lack of environmental protection.

In order to make up for the lack of environmental protection without affecting production, we mainly utilized the favorable opportunity of major and medium repairs of equipment to implement environmental of major and medium repairs of equipment to implement environmental protection projects according to plan. The Second Steel Mill is an old plant left over from the time of Japanese occu-



pation. The facilities are old and outdated, the technology is backward. In 1972, this plant used the new technique of top blown oxygen on its No 10 open hearth furnace. After rebuilding, the output of steel of this open hearth furnace improved more than onefold, the cost per ton of steel dropped by more than 4 yuan. But at the time, because of insufficient understanding of environmental protection work, we did not consider the environmental protection problem when using the new technique of top blown oxygen. As a result, during the course of blowing oxygen, 1 large amount of yellowish brown smoke is produced, forming a "large yellow dragon" and becoming one of the biggest polluting sources at the Anshan Steel Works. It not only seriously polluted the environment, it also wasted a lot of iron-containing resources. In 1978, we used the opportunity of major repairs of the No 10 open hearth furnace, added a KY-100 surplus heat boiler and a 60-square meter electrical dust extractor. They not only recovered a large amount of hot surplus steam, they also reduced the concentration of released smoke from the original 13,000 milligrams per cubic meter to about 50 milligrams, and the "large yellow dragon" virtually disappeared. Each year, 12,000 tons of dust containing about 60 percent of iron could be recovered. During the major repairs of the Third Sintering Shop of the General Sintering Plant in 1978, we added four electrical dust extractors and reduced the concentration of released dust from the original 7,000 milligrams per cubic meter to 43 milligrams. The concentration of dust in the air at the end of the machinery was reduced from the original 450 milligrams per cubic meter to 5 milligrams. This not only completely reached the state standards, each year, 35,000 tons of dust containing 50 percent of iron could be recovered worth 1.19 million yuan, realizing a net annual profit of over 600,000 yuan. The investment in environmental protection projects could be recovered in 5 years.

Fourth, we closely combined small improvements and renovations, and widely launched activities of a mass character to control pollution.

During the course of controlling environmental pollution, we implemented the method of control by levels. Major problems of pollution were uniformly solved by the company, and small pollution problems were solved by the plants themselves. This fully mobilized the enthusiasm of each plant to control pollution, and many pollution problems were quickly solved. The Anshan Steel Works plant property department mobilized the masses, started out from rebuilding the technological processes of boilers, greatly eliminated smoke and dust and, rebuilt 43 coal fired boilers into coal gas generating boilers. This not only solved the problem of pollution by boiler smoke and dust in densely populated residential areas, it also conserved more than 5,000 tons of coal during each heating period because of improved thermal efficiency. The Cold Rolling Mill of the Anshan Steel Works mobilized the masses, self-reliantly completed the main project to recover waste emulsion with an investment of only 20,000 yuan. Each year, the project could treat and release 3,600 tons of waste emulsion. This not only solved the problem of pollution of the water system by waste emulsion, it can also recover and recycle 3,000 tons of emulsion and 100 tons of waste oil for production, conserving more than 380,000 yuan each year. The Steel Cable Plant of Anshan Steel Works used to be seriously polluted by lead dust. Since 1979, it has widely mobilized the masses to develop scientific research activities to overcome the problem and has found a solution. Thus, past pollution that exceeded the allowable standards by more than tenfold has now met the state standards.

III. Several experiences in combining technical improvements and controlling environmental pollution.

First, old enterprises are faced with a heavy task of technical improvement. Environmental protection must be an important part of technical improvement.

In 1980, we established the 1981-1985 plan for readjustment and technical improvement of the Anshan Steel Works. It was approved by the State Council. In this plan, we included environmental protection work in the general technical improvement plan for the Anshan Steel Works as an important component. Environmental pollution problems are to be solved along with progress in technical improvement according to plan and step by step. For several years, environmental protection work progressed year after year at the Anshan Steel Works and environmental pollution has improved year after year and visible economic benefits have been realized because we included environmental protection work in technical improvement so that funds and forces have been guaranteed and measures have been implemented. Practice has made us realize that controlling environmental pollution through technical improvement can make the production distribution rational and realize a unity of environmental results and economic benefits. It is an effective method that requires less investment and produces quick results and large gains.

Second, including environmental protection in technical improvement not only can realize visible environmental results, it can also realize visible economic benefits.

In recent years, we began by improving the rate of utilization of resources and energy and comprehensively utilized the "three wastes" on a large scale. This not only reduced consumption, developed production, created more material wealth for the state, it also reduced environmental pollution and realized visible environmental results. Since 1978, we invested a total of more than 90 million yuan to control environmental pollution. But we insisted on utilizing resources and energy and changed waste into things of value to the greatest degree from all sides. In 4 years, we realized a total of more than 50 million yuan in profits from the "three wastes." We not only could recover the funds used for controlling pollution quickly, we also provided funds for controlling pollution. Therefore, simultaneously solving the environmental pollution problem in technical improvement is entirely consistent with the principle of technical improvement.

Third, to do environmental protection work well in technical improvement, we must emphasize control on the one hand and management on the other.

For several years, while promoting the control of environmental pollution, we also promoted environmental management. We established environmental management methods, established and made sound a system of environmental protection regulations, strengthened equipment management, and stopped running, spewing, dripping and leaking. We developed constant activities to reorganize the appearance of the plant premises, beautified the environment, strengthened environmental protection and such measures, and we gradually included environmental protection work in the evaluation of the economic responsibility system so that environmental protection work became part of the normal management of

the enterprise and we realized very good results. Practice has made us realize that emphasizing control and building additional environmental protection facilities are necessary measures to improve the environment and to make up for the lack of environmental protection in old enterprises. Emphasizing management and reducing the irrational release of the "three wastes" during the production process as much as possible are important means to prevent environmental pollution and to consolidate the results of control.

9296

CSO: 5000/4108

INDUSTRY URGED TO EMULATE ANSHAN STEEL WORKS ENVIRONMENTAL PROTECTION WORK

Beijing HUANJING BAOHU [ENVIRONMENTAL PROTECTION] in Chinese No 9, Sep 82 p 22

[Article: "National Industrial System Meeting To Exchange Experience in Prevention and Control of Pollution"]

[Text] The national industrial system meeting to exchange experience in prevention and control of pollution was held in Beijing from 15 to 20 August. The meeting was jointly sponsored by the Ministry of Urban and Rural Construction and Environmental Protection and the State Economic Commission. The heads of the economic commissions and the chiefs of environmental protection bureaus of the nation's provinces, cities, autonomous regions and 17 key environmental protection cities, administrative and responsible personnel of the various industrial departments of the Central government, managers and plant managers of 150 industrial enterprises totaling more than 400 people participated in the meeting.

Last 29 December, Premier Zhao Ziyang issued directives for environmental protection work at the Anshan Steel Works. He pointed out: The experience of self-reliance, comprehensive utilization of resources, energy and the treatment of the three wastes by the Anshan Steel Works is worth our attention. He asked every locality to conscientiously organize efforts to popularize and propagandize them. For over half a year, all industrial systems and environmental protection departments have widely propagated and implemented this directive by Premier Zhao. The industrial departments at each locality have also summarized the typical experience of their own system and in their own regions on the basis of learning the experience of Anshan Steel Works. This meeting was held to continue to implement the directive by Premier Zhao, to exchange experience, to further promote the work of preventing and controlling pollution by industrial enterprises and to protect the environment well.

Responsible comrades of 14 units, including the Anshan Steel Company and the Beijing City Environmental Protection Bureau, spoke at the meeting. Representatives of 23 units issued reports in writing. We can see from these detailed reports that as long as the leadership cares, strengthens environmental management, starts with conserving resources and energy, launches comprehensive utilization, combines these with technical improvement, and controls pollution, the problem of industrial pollution can be solved.

Deputy chief of the State Economic Commission, Ma Yi [7456 0308], minister of the Urban and Rural Construction and Environmental Protection Li Ximing [2621

6932 6900], deputy chief of the State Planning Commission Fang Weizhong [2075 4850 0022] delivered reports at the general meeting. Ma Yi stressed the seriousness of industrial pollution in his report and explained how to combine efforts with economic readjustment to develop environmental protection work. Li Ximing summarized the basic experience in preventing and controlling pollution by our nation's industries in his report, and proposed the requirements for future work.

Delegates to the conference thoroughly discussed the "several regulations concerning the problem of preventing and controlling industrial pollution and improving the environment" as drafted by the State Economic Commission and the Ministry of Urban and Rural Construction and Environmental Protection for the State Council.

9296

CSO: 5000/4108

## STRIKING A BALANCE BETWEEN INCREASED PRODUCTION AND ENVIRONMENTAL PROTECTION

Chengdu SICHUAN RIBAO in Chinese 19 Nov 82 p 1

[Text] Recently, the provincial Planning Committee, Economic Committee, Construction Committee and Bureau of Environmental Protection jointly held a conference on exchanging experience in the treatment and control of industrial pollution of the provincial industrial complex. After the conference, everyone was aware of the extreme importance of handling the relationship between production development and environmental protection correctly. While developing production, attention must be given to protecting the environment. When the environment is well protected, production and development may be promoted. If considerations are given only to the production needs of the present with no consideration for environmental pollution and destruction, it would amount to sacrificing the environment in exchange for production and development and we would pay a penalty. Comrades engaged in economic work should have a production as well as an ecological viewpoint to coordinate production and development with environmental protection.

In recent years, great progress in environmental protection work has been made in Sichuan and there have been major achievements. However, due to insufficient understanding, there have not been long-term considerations of environmental protection in industrial construction. Attention was given to production constructions and not to pollution control or environmental protection. Pollution control measures were not adopted in a majority of factories and mines. A large number of industries discharged the "three wastes" directly into the environment to cause the environment of factory and mine centers to be seriously polluted. Pollution of water and air affects the production of agriculture, animal husbandry, sideline and fishing industries and directly endangers the physical health of the people. Large quantity emission of the industrial "three wastes" also seriously harm the industries themselves. Many enterprises, especially the electroplating and chemical industries, the equipment and the plant suffered severe corrosion; production safety was endangered and economic benefits were poor. Pollution by the "three wastes" also caused conflicts and disputes between workers and farmers and among factories affecting normal production and process. For this reason, in order to implement the spirit of 12th Party Congress and to reach the goal of quadrupling the gross output of value of industrial and agricultural products, the problem of industrial pollution must be included in the daily agenda of discussions and be conscientiously resolved, now and in the future. How can

environmental protection be closely combined with production development? According to surveys and researches by related areas and the practice of some enterprises, efforts should be exerted in the following aspects: First, the policy of self-reliance, comprehensive utilization of resources and energy, and treatment of the "three wastes" should be seriously carried out, based upon the principle of whoever pollutes should treat the pollution. The industrial departments and the enterprises themselves should rely upon their own capability and tap their own potential to resolve their own pollution problem. For example, the Tongliang County Nitrogen Fertilizer Plant had been operating at a loss for a long time, they raised the capital themselves to treat the pollution and to reclaim and comprehensively utilize the resources. They have since cast aside their deficits, fulfilled the eight economic and technical indices, and become a red flag unit in the nitrogen fertilizer industry.

Second, resolving some problem sources of pollution that are difficult to treat through industrial readjustment and reorganization. Those enterprises that consume resources and energy at a high rate, have been operating at a loss for a long time, and are seriously polluting should be resolutely closed and converted according to their respective conditions. Primary emphasis should be given to relocate those enterprises located in a region of protected source of water, a region of dense population, or a region of scenic vistas. Cities, towns and industrial centers should be gradually reorganized for specialization to establish specialized and cooperative centers of such heavily polluting industrial enterprises as electroplating, casting, forging, printing and dyeing, and paper-making that are now scattered everywhere, so as to treat the "three wastes" in a concentrated manner. The commune-brigade industries and the street industries that are severely polluting should be restrained from further development. Third, pollution control and treatment should be carried out through technical reform. In the process of reforming the work procedure or renewing the equipment, enterprises should conscientiously resolve their pollution problems and raise the level of comprehensive utilization. The Hongzhen Chemical Plant of Zigong reformed its soda ash and chlorine systems in the process of its technical reform program. Its major sources of pollution are basically eliminated and realize an operating profit instead of loss. Fourth, during the process of reorganizing an enterprise, the environmental management should be strengthened to establish a solid environmental management responsibility system and make it one of the contents for judging the reorganization project of the enterprise. Fifth, the guidance for control and treatment of industrial pollution should be strengthened. The people's governments at various levels should assign industrial pollution control and treatment and environmental improvement an important place in their daily discussion agenda and strengthen leadership. The statistical committees, economic committees, industrial departments, and environmental protection departments of various levels should coordinate with one another closely to investigate and study the actual condition, to summarize experience and to carry out the work of planning, coordination and monitoring conscientiously and to help the enterprises resolve environmental pollution problems through ways of strengthening management, technical reform, etc. Propaganda and education on environmental protection should be carried out to arouse all sectors to contribute positively in creating a new phase of environmental protection in Sichuan.

## REDUCING URBAN POLLUTION WITH INCREASED USE OF HONEYCOMB BRICQUETTES

Taiyuan SHANXI RIBAO in Chinese 19 Nov 82 p 2

[Text] After Germany had successfully made brown coal brick [lignite] to be used as a fuel for steam locomotives, Japan developed it further into honeycomb bricquettes and extended them as a household fuel for the people. China began its development of honeycomb bricquettes in the 1930's and 1940's but the progress has been very fast in the short period of time. The report on the extension of honeycomb bricquettes published in today's issue of the newspaper is one example. With the attention of the municipal people's government, the related departments have performed a great deal of work to improve the understanding of it among the users. It must be pointed out that the use of honeycomb bricquettes is a matter of changing a tradition. A great deal of long-term propaganda work is required and at the same time some actual problems of the users must be resolved through assistance. For example, there are problems of the price, the quality, and the method of supply of the bricquettes. If everyone in the city feels that using the bricquettes can save energy for the state--they are, in fact, cheaper than coal, more sanitary, and less laborious--then the increased use of honeycomb bricquettes will soon become a voluntary action among the masses.

Taiyuan Municipal Fuel Company has put a great deal of emphasis on its work of extending honeycomb bricquettes as a household fuel. According to statistics, in 1980, the city had 10,000 households using the bricquettes as fuel and 14,400+ tons of the bricquettes were produced. In 1981, user households developed to about 30,000 and bricquette production to 36,400 tons. This year, user households will grow to about 60,000, amounting to one-fourth of all households. The production and supply of honeycomb bricquettes will also correspondingly grow to 65,000 tons.

Taiyuan is famous for its coal production and the people are accustomed to burning large amounts of coal. A great deal of work is required to extend the use of honeycomb bricquettes. The basic experience of these years is that the governments of all levels and the commercial departments must help one another in the promotion work. The Taiyuan Municipal Fuel Company carried out propaganda in newspapers, broadcasting stations, film displays, meetings and printed handbills to explain the advantages of using honeycomb bricquettes and the importance of saving coal. Meanwhile, the municipal petroleum company, the Jinxi Machine Plant, and the newly constructed Jiefang Road building complex organized exhibits and



on-site demonstrations. Second, classes were organized to train people to reconstruct and repair furnaces and stoves. Some thirty full-time and part-time workers have been trained in changing and building brick honeycomb stoves, and they were also given the job of teaching all other workers of coal plants to establish a backbone team for extending honeycomb brickquettes and converting stoves. Third, they concentrated on high-rise buildings. In recent years, people with special training were dispatched to the Taiyuan Steel Plant, the Provincial Committee Building, etc., to provide assistance, to supply materials, to teach experiences and to organize supplies. Such persons were also dispatched to the provincial Post and Telegraphic Design Academy, the provincial Bureau of Geology, municipal Bureau of Commerce No 1, etc., to convert the furnaces of the newly built high-rise dormitories to honeycomb furnaces. In order to accelerate the work of extending the use of honeycomb brickquettes, both the provincial and the Taiyuan municipal governments have continuously issued notices to require the use of honeycomb brickquettes by the 130,000 households of the central area of Taiyuan City, i.e., south of Jiancoaping, north of Dayingpan, west of Jianshe Road and east of the Fen River, between now and 1985. With this target, Taiyuan Municipal Fuel Company is hard at work to improve its supply and demand structure to implement gradually the system of door-to-door delivery for the convenience of users of honeycomb brickquettes.

#### Five Hundred Households in Provincial Committee Compounds Change to Honeycomb Brickquettes

In response to the call of the Taiyuan Municipal Committee, the Provincial Committee compounds have extended the use of honeycomb brickquettes to its dormitories. From 9 October to 3 November, the conversion of all 249 stoves in the 6 dormitories of the East Section was completed. With the stoves reconstructed previously, at present, stoves of more than 500 households there have been changed.

The dormitories of the provincial committees and government are scattered, with numerous inhabitants and miscellaneous occupants. Due to effects of the decade of turmoil, management work had been lax. As a rule, these buildings were dirty and poorly maintained. Piles of coal, dirt, and ash were all over the courtyards. Since Civilization Month last March, the Executive Offices of the provincial government have tried to carry out the work of cleaning up the coal, dirt and ash and extending the use of honeycomb brickquettes, but progress was slow. After the 12th Party Congress, the first secretary of the provincial committee, Huo Shilian [7202 1102 1670], the governor of the province, Luo Guibo [5012 6311 3134], and Deputy Governor Wei Fengqi [5898 6646 4388] repeatedly pointed out that all must learn to promote the work of cleaning up the government buildings. The deputy secretary, Su Chunyou [4725 2504 0645] repeatedly studied with related persons the work of converting stoves and cleaning up. First, he personally led the work, found people to help, and made concrete arrangements and organization. Second, five stove-conversion teams were organized to adopt the method of contracting the work for a fixed amount to guarantee the quality and quantity. In sequence, the stoves of every household, every unit and every building were converted. Third, people from the Executive Department and Housing Management

Department were reassigned to form coal-gathering teams, coal-bin disassembling teams, and yard leveling teams. The cadres and workers of various departments, committees and bureaus of related provincial offices were urged to form work duty groups. With the attention of the leaders, the work was intensively performed and the tasks were well organized. The residential committees got together with all the households to make the job progress very fast. All the stove conversion jobs of the dormitory buildings No 1 to No 6 of the East Section were finished. The coal stored by the residents, weighing more than 160 tons, was purchased. More than 300 piles of coal and dirt were cleaned up. The yard thus cleaned measured more than 3,000 m<sup>2</sup>.

At present, the stove-conversion team has moved the target to the Donghuayuan Dormitory. In the East Section, the work of tearing down the coal bins, leveling the yards, planting trees and flowers, and constructing the parks is earnestly in progress. On 6 November, the deputy governor, Wei Fengqi, and the deputy secretary of Taiyuan Municipal Committee, Zhang Huating [1728 5478 1694], supervised an on-site meeting of the East Section Dormitories to discuss the experience of using honeycomb briquettes.

#### Production and Supply of Honeycomb Briquettes

In Taiyuan City, machine-made honeycomb briquettes first appeared in 1958, but the progress in the first 10 years was very slow. The users were mainly workers transferred from other areas to Taiyuan. By 1966, the annual production was 1,700+ tons. The next decade was also a slow growing period, with annual production fluctuating around the 4,000 to 5,000-ton level. Since 1979, the number of users and the annual production have doubled and tripled. By the end of 1982, the number of user households grew to about 60,000 and the annual production to 65,000 tons to form the current peak of extension of honeycomb briquettes.

The commercial honeycomb briquettes in Taiyuan City are industrially produced by the Taiyuan Municipal Fuel Company which handles the production, supply and sale by itself. The current standards are as follows: The large size briquettes measure 68-75 mm in height, 125-128 mm in diameter, with 12 holes. The dry weight is 1.05 kg; the static pressure load is 50-70 kg. Furthermore, the briquettes are further graded as No 1 and No 2 types according to their properties. Yanquan mixed coal is used as the raw material for No 1 briquettes and Yangquan peat is used as the raw material for No 2 briquettes. The cost of the two types is different, and their wholesale and retail prices are also not the same. As the company is a unit handling both production and sales and the city has unified prices, none of the retail dealers add transportation costs. The No 1 briquettes sell at 28 yuan/ton retail and No 2 briquettes at 24/ton retail.

In the process of developing honeycomb briquettes production, the Taiyuan Municipal Fuel Company absorbed the experiences of Beijing, Tianjin, Zhengzhou, and Xi'an, using a combination of concentrated production and scattered production, with the latter as the major principle. In the past few years, a production network of a considerable scale has been built up, with Xiaobeimen as the raw material base. Two production plants of some concentration were constructed in Xiaobeimen and Shahebao respectively where there are branch railway lines. More than 10 scattered production plants were also established in Wulongkou, Nanhaijie, Caiyuan, Sanyingpan, Wuchenglu, Xijianlu, Taoyuanxiang, Gunongjie, Dunhaufang, and Yingxinjie for the convenience of the masses.

It takes many processes to make honeycomb briquettes. The raw materials must be transported, crushed, pressed into molds, dried and stored before they are transported to wholesalers and retailers. That is to say, the briquettes must pass through more than 10 links from the raw materials to the finished product and be moved more than 10 times before they reach the hands of the users. As to the cost of such heavy coal products is concerned, the transportation and processing expenses exceed the cost of coal itself. This is especially true under the current condition of not very high degree of mechanization of the production process. The production and sale of honeycomb briquettes are not profitable business. For the purpose of guaranteeing a basic standard of living of the people, the state compensates the production and sales units for a reasonable portion of their losses. Moreover, in the future the state will support the development of honeycomb briquettes in a big way. This explains the superiority of the system of socialism.

(Aside from the signed authors, papers for this column were supplied by Dong Liangchen [5576 5328 5256] and Tong Jintai [0104 2516 1132])

6248  
CSO: 5000/4113

## INVESTMENT IN SHANXI ENVIRONMENTAL CLEAN-UP PAYING OFF

Taiyuan SHANXI RIBAO in Chinese 17 Nov 82 p 2

[Article by Wang Xingnan [3769 5281 0589] and Chang Xueqing [1728 7185 7230]

[Text] The Department of Environmental Protection of Gansu Province depends upon the industrial system's own capability to vigorously promote the treatment of the "three wastes," eliminate pollution and protect the environment. Favorable achievements have been made and more than 30 advanced enterprises have emerged.

Shanxi Province began treating the "three wastes" of industry in the early 1970's without much effect. After the 3d Plenary Session of the CPC Central Committee, many old enterprises began to pay attention to reform old technology and extend new techniques. Old equipment was renovated, the rate of utilization of resources and energy was raised, and pollution was reduced. Through technical reform, the Taiyuan Pharmaceutical Plant renovated and transformed its old equipment and backward technology to reduce and eliminate the amount of the "three wastes" discharged. In the plant, 890,000 cubic meters of waste gas has been treated, amounting to a treatment rate of 90.8 percent. The rate of waste-water comprehensive utilization has reached 43 percent and the rate of treated waste residue 77.8 percent. The reclamation and utilization of these resources produced over 20,000 tons of more than 30 types of chemical raw materials worth more than 5.7 million yuan. The capital investment of 1 million yuan in environmental protection of the past few years has long been completely recovered. The trees near the plants that had been killed by the yellow smoke, sprouted green leaves again. Through technical reform, the Taiyuan Iron and Steel Company greatly reduced the amount of "red," "yellow," and "black smoke" discharged. Through technological transformation, the Shanxi Chemical Plant has been using benzene-free terminal agent to replace the benzene terminal agent to eliminate benzene pollution. The Xinhua Chemical Plant reconstructed its electrical dust filtering equipment to reclaim and utilize the harmful contents of its yellow smoke to control pollution of the atmosphere by the "yellow dragon," every year it has also recovered more than 1,000 tons of tar to be used partially as the raw material of activated charcoal and partially as the fuel of the activation to replace the original activation station that had to be attended by 50 workers and consumed 4,000 tons of coal a year. Some enterprises and the Department of Environmental Protection of Shanxi adopted comprehensive utilization of resources

and energy as an important measure to reprocess industrial waste materials and change them into things of value. The Shanxi Chemical Plant invested 2.65 million yuan to construct a cement plant for comprehensive utilization of calcium carbide dregs; in 8 years, a total of 1.124 million tons of cement has been produced, worth 6.42 million yuan. The Yangquan Bureau of Mines has been pumping the gas under the pits to be used for heating and cooking by all the workers of the bureau. Every year, 45,000 tons of coal are saved, worth 1.12 million yuan. The No 2 Mine of that bureau has been using gangue to make gangue bricks, more than 26 million tons have been produced, using more than 90,000 tons of gangue and reducing sulfur dioxide pollution of the atmosphere.

The three-waste treatment to reduce and eliminate pollution experiences of these enterprises have been popularly extended among the industries of the province. Recently, the provincial Economic Committee and Bureau of Environmental Protection called a conference to exchange the experiences of pollution treatment and control of the industries. Representatives of 14 units, including the Taiyuan Pharmaceutical Plant, Xinhua Chemical Plant, Huaihai Machine Plant, Yangquan Bureau of Mines, Wuyang Coal Mine of Luan Bureau of Mines, Shanxi Printing and Dyeing Plant, Jiexu Leather Plant, etc., passed on their experiences and 18 other units delivered written reports. The conference asked the departments responsible for the work of all industries, plants and mines to include environmental protection plans in their technical reconstruction plans in accordance with the intermediate and long-term plans of developing the national economy, to coordinate needed technical reform with comprehensive utilization of resources and energy and the treatment of the "three wastes" so that economic benefits are coordinated with environmental protection results. In constructing new plants and in major reconstruction and expansion of old plants, the needed capital for pollution control and treatment should be included in the basic construction plan. When construction plans are inspected and reviewed by the department of planning and the department responsible for the work, capital investment for pollution control and treatment must be included. All future construction projects must implement the "three simultaneous efforts" if they are harmful to the environment. The department of environmental protection must be strict about ensuring these efforts, all projects that do not adopt these measures will not be allowed to be built. All projects that are irrationally distributed, waste too much energy, or seriously pollute the environment and lack treatment measures should all be stopped. Research on the science of environmental protection should be strengthened. The department responsible for the work should join the environmental protection, science and technology departments to organize manpower to extend the results of such research work so that they may be quickly applied in production.

6248

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## STRICT PRECAUTIONS AGAINST INDUSTRIAL POLLUTION OF COUNTRYSIDE

Tianjin WEISHENG KEPU BAO in Chinese 10 Jul 82 p 1

[Article by Zhang Jiehyi [1728 4634 5030], Deputy Chief, Tianjin Office of Environmental Protection]

[Text] Most of China's 9.6 million square kilometers of land is taken up by agriculture, and most of its one billion population is engaged in agricultural production. But a warning is sounded when measures such as regulations, reforms, controls etc., which are associated with industrial pollution in the urban environment become necessary, and when some industries capable of pollution with their waste products are relocated to the countryside. Following the development of enterprises in agricultural communes and brigades, there is a gradual rise of some industrial activity and secondary industries that produce waste pollution. Actually, China's present agricultural environment is a good one, but foresight is needed to protect it. If waste pollution appears in the countryside, the consequences will be dire. Let us take electroplating and asbestos processing in the agricultural environment as examples to see what happens.

In electroplating producing, toxic and harmful cyanide and chronic anhydride are used. Cyanides can cause acute poisoning in humans, and serious symptoms such as oxygen deprivation in tissues (serious anoxia). The lethal dose by mouth is 0.3-0.5 mgm for humans. Long-term contact with cyanide products of low concentration can also cause chronic intoxication manifested as headache, insomnia, fatigue, etc. For this reason, the electroplating industry is promoting a new technique that does not use cyanide. In the cities, the electroplating industry is undergoing reorganization by cutting down on the number of plants. However, it was recently found that many of these plants have relocated to the countryside on their own, while in the countryside there are those who "wish to grow rich by mastering the skill of electroplating." If this is not brought under control in time, serious pollution of the countryside will surely appear.

Asbestos production is the cause of asbestos lung or asbestosis. For economic benefit, some communes frequently engage in asbestos processing under very primitive conditions without any pollution control measures, resulting in serious harm to peoples' health. According to a survey made in Tianjin, the number of individuals having asbestosis is more than 1,400, found chiefly around asbestos processing plants in suburban and county districts. In most cases, the condition is also complicated by tuberculosis.

In some commune brigades, the toxic wastes from certain chemical plants are re-processed, thereby spreading the contamination to the countryside. Some brigade enterprises were found to use waste residues containing hexabasic chromium to produce chromate, and in less than a year the water sources and underground water in the surrounding area were heavily polluted.

The examples just described are warning us that protection of the agricultural environment must be strengthened the same time that urban pollution is brought under control, particularly with strong active control measures before the hazard becomes a fact. This must be approached from two directions. One is strict control of toxic and harmful industries that are relocating in the countryside as the result of urban pollution control, with strong measures and necessary legislation assigning responsibility. The other is not to have commune brigades engage in any toxic or harmful secondary industry, and to effect necessary control measures when that could not be avoided. At the same time, a program educating the public on environmental protection must be initiated.

5292

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SHAOXING NOTES EARLY RESULTS IN INDUSTRIAL WASTE POLLUTION CONTROL

Hangzhou ZHEJIANG RIBAO in Chinese 28 Jul 82 p 1

[Article by Gao Yen [7559 3601]

[Ed. Note]

Control of waste water pollution to assure protection of the environment is a new activity that most members of the urban and county leadership admit inexperience. Under such circumstances, how can a working approach be developed quickly? The experience of the city of Shaoxing may provide a lead. It suggests a survey study be made first to understand the conditions, after which the masses and related agencies are called upon to resolve this real problem. Results are obtained more quickly this way with fewer detours.

While Shaoxing is tackling this immediate problem of waste disposal, it also has its eye on the future. Its method of coordinating present measures with a long-range control plan is worth consideration by others. Such an approach favors protecting the environment, prevents unrealistic measures, and produces economical, yet effective, results.

[Text] The city of Shaoxing, famous for its "three vats" (wine vats, sauce vats, and dye vats), is obtaining favorable results in dealing with its waste water pollution problem, because of the importance given it by city officials.

The ancient city of Shaoxing has had a long history of water control. "Flood control by Emperor Yu of the Xia Dynasty," construction of the Jian Hu by Ma Zhenxing [7546 5271 5281], a governor of Juiji during the Eastern Han period, construction of the Sanjiang Locks with 28 openings by Tang Shaoen, Shaoxing prefect during the Ming Dynasty are episodes found in legend and history books. In recent years, following rapid industrial development and production, control of industrial waste pollution has become a new challenge for the Shaoxing populace. According to statistics, the industrial wastes released last year within the city limits amounted to 37,000 tons daily, and domestic sewage was 4,000 tons. Repeated day after day, not only does this destroy the natural scenery, it also threatens the health of the people. Beginning this year, the city officials have provided strong leadership to tackle this problem, and appointed a deputy secretary and a commissioner to oversee urban



construction and environmental protection work. Other leaders also took on waste pollution control as part of their own responsibilities. Deng Xizhai [6772 5045 7872], Party secretary of Shaoxing, proclaimed on New Year's Day that the first matter to be attended to would be a visit with responsible officials on the city and town levels to Miaoqiao to investigate a polluted well that had cut off usable water supplies to 23 households. After on-site explorations and assessment of the masses' views, they immediately drew up three specific measures. Deng followed up with three more checks until the problem was completely resolved.

On May 1st, the aquatic products brigade of Lingzhi commune also discovered that 8,650 fish fry of different varieties and sizes had all perished in four nets and 30 percent of the fry in another seven such holding nets had died. When an important official on the city council heard of this, he immediately called a meeting between the bureaus, offices, and commercial establishments concerned and the epidemiology station, conducted an on-site visit, and found that water pollution was the chief cause of death among the fish. On the following day, the city council organized four survey units to check on waste disposal conditions at related factories and enterprises to find the pollution source and provide a solution.

In February of this year, local and city council officials of Shaoxing also visited some important industrial enterprises and made an overall appraisal of waste water pollution conditions and obtained firsthand information. The city council immediately called on related agencies to study the problem, and decided also to call on 21 factories and enterprises that posed the most hazards yet had the best conditions for controlling pollution, to correct the problem within set time limits. The Shaoxing Silk Screening Factory is a large production unit that releases 1,500 tons of waste daily, but its original waste disposal equipment is not compatible with production, so the city council ordered it to complete before May, its disposal facility capable of treating 2,000 tons of silk dye waste daily. After the manager for this plant was appointed, all the workers cooperated working day and night for this new waste disposal facility and completed it on April 29th. On May 1st, Ma Jujo of the city management team inspected it, and water samples taken showed indexes meeting or lower than the national standards. The factory was cited for this accomplishment, and collection of a waste disposal fee was waived.

However, for those units with inadequate resources of manpower, money, or technologic know-how, the city council organized them to share resources and collaborate in a joint effort, the large helping the small, and the strong leading the weak. The Hanxiang Plant which produces fermented bean curd and the Shaoxing Winery are neighbors and produce the same kind of waste products. The city environmental protection office played "matchmaker" for these two units to dispose of their waste water together; that is having the Shaoxing Winery build a facility adequate to treat the waste water from both plants, and the Hanxiang Food Products Co. share part of the management costs every month. It was found that such arrangements quicken the control process. After the city public works department included pollution control in its construction projects, it has placed 94 sewer pipes, repaired 61 wells, and installed 133 new water faucets.

During the process of waste pollution control, the Shaoxing City Council has kept its eyes on the future as well as the present, and has implemented "closing, suspending, merging or retooling" of some factory enterprises. This reporter was able to discover recently that a certain "Shaoxing Urban Waste Water Control Project" of low cost and high efficiency is almost ready for operation. After many on-site discussions by responsible authorities and study by technical experts, the project calls for construction of three sewer trunks in the eastern, central, and western sections of the city. Wastes first treated on site at different plants and factories are discharged into these trunks, which merge into a central line that carries the contents to the coastal area designated for treatment and disposal. Here the wastes are subject to further treatment by sun, air, and sedimentation, after which the clear fluid is discharged into the ocean. This project is expected to be completed within 2 to 3 years. By then the river water in Shaoxing will become clear and clean, and a new picture of pure lake water and natural scenic beauty will again be seen in the ancient city of Shaoxing.

5292

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## YUNNAN PUSHES AFFORESTATION WORK IN RAINY SEASON

Kunming YUNNAN RIBAO in Chinese 6 Aug 82 p 1

[Commentary: "Pay Close Attention to Afforestation Work in the Rainy Season"]

[Text] Because every level of leadership has attached importance to forestry work, many prefectures have initiated the "three fixes" in forestry. They have strengthened the afforestation program and preparations for cultivating seedlings. In June they commenced the monthly all-province, volunteer tree-planting activities. Consequently, this year's afforestation efforts have achieved definite results.

However, afforestation in the barren mountains of our province and the task of volunteer tree planting are still far from complete. The volunteer tree-planting activities in the countryside have not yet fully developed because the rainy season this year has been late, some places have not had rain, and large-scale afforestation efforts have not yet begun. On the other hand, some places have not fully mobilized the masses, in addition, the program has not been sufficiently practical and there have been too few seedlings. Therefore, expected results have not been achieved. We must regard this year's afforestation assignment as very serious; at present we must urgently mobilize and organize the masses, focus on the rainy season, and complete the task and overfulfill quotas; only in this way can we guarantee success.

The crux of whether or not we can complete and overfulfill the afforestation tasks lies in whether or not the villages can take advantage of the rainy season to undertake good afforestation work. Cadres in every area must overcome their relaxed and vacant ideas and as soon as possible organize the masses, in particular the peasants, to actively throw themselves into afforestation during the rainy season. Not only must the collective be involved, but the commune members must also be mobilized to engage in afforestation work on their private mountain lands, on contracted lands, around their houses, and on the edges and corners of fields. The state and collective must provide support in planting seedlings, in techniques, and so forth.

In afforestation, quality is the first priority. The quality of this year's afforestation is better than last year's, but there are still some who only pay attention to the amount of mu and number of trees planted and not the number of seedlings which survive. If this is not rectified, the phenomenon

of "year after year planting trees but not seeing the forest" will be just as hard to change. If we talk of the economic benefits in afforestation, we must first talk of quality. Paying attention to formality or stiving only for quantity and not quality must be resolutely changed through ideological education, through the leadership's control and technical guidance, and through a system of rewards and punishments.

The opportunity must not be lost, time will not come again. We must concentrate on the rainy season and work ceaselessly to fulfill and overfulfill this year's afforestation tasks. We must contribute towards the afforestation of our province!

6722

CSO: 5000/4104

## YUNNAN MAKES PROGRESS IN AFFORESTATION

Kunming YUNNAN RIBAO in Chinese 6 Aug 82 p 1

[Article by Cheng Yongzhao [4453 3057 3564] and Shi Wanfeng [0670 8001 0023]:  
"Preliminary Results Achieved in the Entire Province During Rainy Season  
Afforestation"]

[Text] For 2 months now, every prefecture, autonomous prefecture, municipality, and county, as well as the Central Committee and subordinate departments of the province and military units stationed in Yunnan, have concentrated on the excellent opportunity for afforestation in the rainy season. Leadership cadres have taken the lead and mobilized and organized the masses to actively throw themselves into afforestation activities; they have achieved preliminary results. According to incomplete statistics, since the rainy season began, 820,000 mu of barren mountains have been replanted with trees and 39,120,000 seedlings have been planted. Volunteer direct seeding has reforested more than 70,000 mu, with more than 15 million trees planted. The Zhaotong, Dongchuan, Yuxi and Xishuang banna, the prefectures and cities in Nujiang, Youqing, and elsewhere, and the military units stationed in Yunnan have already exceeded their quotas for the entire year in voluntary tree-planting assignments.

A characteristic of this year's afforestation efforts during the rainy season in our province is the importance attached to it by the leadership and the large number of people participating in the tree planting. During the rainy season, every level of leadership has taken positive actions, taking the lead in going into the mountains to plant trees. Leadership cadres in the province and cities and responsible persons in the military units stationed in Kunming are actively leading the cadres in the official organs to go to the mountains to dig holes and plant trees, thus fulfilling their tree-planting obligations. Responsible comrades of the Zhaotong committee have already participated in tree-planting activities three times this year, voluntarily planting more than 30 trees. Leadership comrades in the Yuxi committee and party and government administrative offices, along with 16 retired comrades, planted on the average six trees in March of this year; and in June they went again to the Dongfeng Reservoir to plant trees. According to incomplete statistics, more than one million people of the province have participated in tree-planting activities. When Wu Mingxing [0702 2494 2502], a 93-year-old librarian of Wenshan prefecture and several other old comrades in the prefectural Chinese People's Political Consultative Conference took part in the tree planting,

they said excitedly: Although we were not organized to take part in the voluntary tree planting, we want to create a bit of wealth for posterity.

Another characteristic in the afforestation efforts during this year's rainy season is that of putting emphasis on quality and increasing the survival rate of the newly planted trees. In order to increase the survival rate of the seedlings, every locality, before the rainy season afforestation began, paid attention to the afforestation specifications and formulated measures to guarantee the quality of the tree planting. Technical cadres of the Forestry Bureau of the Dai Nationality Autonomous Prefecture in Xishuang banna have gone to the mountains 15 times to undertake the program and to explain afforestation techniques. The two prefectures of Wenshan and Honghe have trained a corps of technical cadres for afforestation. Every locality is resolutely concentrating on the specifications for digging embankments and quality in tree planting. When they discover something not up to specification, they immediately instruct the tree-planting unit to do the job over again, to re-plant, or to carry out supplementary seeding. Dongchuan and other places are also initiating quality-inspection and evaluation activities; they praise those units which have done high quality tree planting, and demand replanting where the quality is not up to specification.

At present, some regions where tasks have not been completed are taking advantage of the rainy season for afforestation. The districts, prefectures and municipalities which have already completed their afforestation tasks have absorbed last year's lesson of "year after year planting trees but not seeing the forest"; they are now changing the focal point of afforestation work to care and protection. Everywhere they are putting into effect the system of responsibility of timber management and strengthening management work. The Kunming City people's government organs have dispatched six persons to go to the mountains to pitch a camp to safeguard the 800 mu of timber land developed by the city government organs. The Nilagu Brigade of the Xincun Commune in Dongchuan City that faces the mountains assigned seven timber-protection personnel to undertake timely safeguarding of the newly planted trees. A construction company in Yuxi Prefecture adopted the system of responsibility of designating specific persons to safeguard the survival of the trees. At year's end they carry out inspections, and give awards according to the estimates of the number of trees surviving.

Some problems remain in this year's afforestation efforts. Since the rainy season in our province was delayed and the preparations for planting seedlings and work in technical direction could not catch up, the rainy season afforestation activities have, as a result, generally been delayed; in some prefectures the progress has been slack and slow. In particular, the volunteer tree planting in the countryside has not yet completely started. Up to 20 July, 59 percent of the afforestation work in the barren mountains of our province was completed, 67 percent of the volunteer tree planting and other tree planting tasks have been completed. Therefore, every area should continue to emphasize afforestation work.

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CSO: 5000/4104

## SYSTEMS OF RESPONSIBILITY IN FORESTRY WORK URGED

Beijing RENMIN RIBAO in Chinese 12 Oct 82 p 2

[Commentary: "A Good Method For Managing Collectively Owned Forests"]

[Text] In the rural areas of China, there are some commune and brigade forestry centers that are collectively owned. Just as with state forests, these forestry centers play an important role in maintaining ecological balance, improving microclimates, forming a regional, integrated economic structure and raising the income of peasants. They are an important asset of the peasants and an important and productive way to bring rapid prosperity to the peasants.

After the rural areas implemented the system of production responsibility, the peasants were confronted with the painstaking and important task of how to adopt appropriate measures and how to protect and develop forestry resources better. The Wangjiabao Brigade in Qingyuan County in Liaoning Province implemented the following measures allotting shares in the forest, unified management, contracting on the basis of specialized tasks and distributing profits so that commune and brigade forestry centers continually develop. Other areas can learn from their experience.

Collective forestry centers are collectively owned, that is to say they are owned by the individual members of the collective. The key to protecting and developing collective forestry is to tie together the development of forestry enterprises and the material interests of each collective member, so that everyone is concerned about the effective management of forestry. But forestry is different from other productive activities, it is impossible for each member of the collective to be directly involved in management. This requires proper handling of contracting on the basis of specialized tasks, at the same time, the correct handling of the relations between the commune and brigade, the forestry center, the contractors and the entire body of peasants who possess the rights to the forest, seeing to it that all sides can receive their reasonable due from the development of the forests. Only in this way, can you both mobilize the productive enthusiasm of those directly involved in management and also mobilize the initiative of those commune members not directly involved in forestry production to protect the forests. The Wangjiabao Brigade promptly put a stop to the unhealthy

trend of indiscriminately felling trees, and this is one of the basic reasons for the rapid development of its collective forestry.

China has a large rural area and conditions in each area are dissimilar. The concrete methods employed in the system of responsibility need to be different, but the system of responsibility must be implemented in the field of forestry. If each area will only seriously implement the policy of the Party Central Committee and the State Council with regard to protecting the forests and developing forestry and will work at consulting and cooperating with the masses, then it certainly can find management methods suitable to local conditions.

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## CONTRACT SYSTEMS USED IN LIAONING FORESTRY

Beijing RENMIN RIBAO in Chinese 12 Oct 82 p 2

[Article by Lin Xuan [2651 5503]: "Most Commune Brigade Forestry Centers in Liaoning Implement Contracting on the Basis of Specialized Tasks--Handling Three-Sided Relations Well, Rapidly Developing Forestry Production"]

[Text] Each locality, municipality and county in Liaoning Province has actively promoted the responsibility system of contracting on the basis of specialized tasks in commune and brigade forestry centers, has carefully handled the rights and interests of the communes and brigades, the forestry centers and the individual, has mobilized enthusiasm for every aspect of caring for, protecting and planting forests, and has mobilized afforestation efforts in plains and hilly areas throughout the province.

For 2 years now, Liaoning Province has seriously worked to make collective afforestation by communes and brigades a major project, actively developing state forests, encouraging each individual commune member to plant trees and, in this way, has hastened the development of collective forestry. Up to the end of 1981, collective forestry throughout the province involved more than 70 percent of the total forested area and stored forestry products. In order to consolidate and develop collective forestry, commune and brigade forestry centers have actively promoted contracting responsibility systems, with excellent results. According to statistics, there are already more than 25,000 brigades and production teams throughout the province that have established specialized contract systems of responsibility involving contract planting, contract nurturing and contract processing. Under the premise that forestry rights do not change, the degree of autonomy by managers has been expanded. Units in charge of forestry recover their due profit, nursery stock and sideline forestry products, after the contracted units have completed their tasks for the state, they handle their accounting independently, being responsible for any profit or loss and offering remuneration to their workers in accord with the amount of income the unit earns. In this way, the interests of the large collective, the small collective and the individual workers are bound together and the initiative of those directly involved in forestry production is mobilized, which lends vitality to consolidating and developing commune and brigade forestry centers. The jointly run forestry center of the Wangjiabao Brigade of Nankouqian

Commune in Qingyuan County contracted with the brigade and four production teams to handle 74,000 mu of collective forest. They have used the method of allotting shares in the forest, unified management, contracting on the basis of specialized tasks and distributing profits. In recent years, not only has the indiscriminate felling of trees been stopped, but 4,700 mu of land has been afforested speeding up the care of young and middle aged stands of trees, increased the volume of forestry products and raised profits 64.4 percent.

In the course of promoting and using contract responsibility systems, party and government leaders at every level in Liaoning Province have paid great attention to working out measures to suit local forestry conditions, allowing great variety and avoiding fitting everything into the same mold. In terms of constructing forests, all areas turned into commercial forests or shelter forests are specifically managed by the forestry centers (specialized teams) of communes and brigades; small stands of forest, orchards and plant nurseries are primarily managed under contract by specialized small groups and forests erected on barren hills and beaches are primarily managed under contract by specialized households. Forestry centers have contracted out more than 27.8 million mu of forests to all kinds of specialized contract units to be managed as commercial and shelter forests, and this represents 70 percent of the collective mountain forest land within the province. These units have served as mainstays and models in the areas of preserving forest resources and improving the economic results of collective forestry. More than 3,600 specialized forestry groups, more than 800 joint management groups and more than 2,260 specialized households in forestry have also played an important role in protecting and developing collective owned forests.

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CSO: 5000/4109

## ZHEJIANG EMPHASIZES FORESTRY WORK THIS WINTER, NEXT SPRING

Hangzhou ZHEJIANG RIBAO in Chinese 21 Sep 82 p 2

[Text] With the spirit of the 12th Party Congress as the motivating force, we must resolutely strengthen leadership and guarantee, at a high level of quality, the completion of the task of the "three fixes" in forestry this winter and next spring in order to vigorously develop a good foundation for forestry. This is the demand put forward by the recently concluded all-province work conference on the "three fixes" in forestry.

In March of last year, after the Central Committee and the State Council had promulgated the "Decision concerning Certain Questions on Protecting Forests and Developing Forestry," every region of the province, expanded the work of the "three fixes" in forestry. According to statistics, throughout the entire province 69.3 percent of the communes (towns), out of a total of more than 3,100, have begun the "three fixes" work. Of this number, 55.5 percent of the communes (towns) have already completed the work of defining jurisdiction and issuing certificates. In the province, more than 56 million mu, part of the mountain forest authority, have been settled; more than 73,000 disputes have been mediated, constituting 90 percent of the total number of mountain forest disputes. This provided commune members with more than 2,630,000 mu as private mountain land and more than 3,790,000 metres of afforested sectors. Many commune members also established and strengthened the various forestry systems of responsibility. Practice for more than 1 year proves that expanding the work of "three fixes" in forestry plays a positive role in eliminating the influence of "leftist" errors in forestry work, in protecting the forests, and in developing forest production. However, since some places did not concentrate hard enough in the beginning, the work of "three fixes" has not progressed rapidly, its quality is not high, and the work load is still heavy. In order to guarantee the high-quality and high-level completion of this task this winter and next spring, the conference demanded that every area focus on the following items of work.

Further Strengthen Leadership over the Work of "Three Fixes" in Forestry.

Every level of government must undertake planning and arrangements and make the expansion of the "three fixes" in forestry a basic item in the agenda of basic agricultural construction; it must be pursued in the same way that the system of responsibility in agricultural production is. Those places that

have already completed the work must, in accordance with standards, undertake inspection. All those who have not reached the standard must concentrate on making corrections. Those who are just doing things perfunctorily must resolutely do the work over; those places where inspection were up to standard, are to retain the necessary work teams and continue to stress consolidation. The places where the work of "three fixes" is progressing slowly, in particular the flat lands, should adopt more effective measures, quicken their pace, and try hard to catch up.

With a Positive Attitude Designate Private Mountain Land and Tree-Planting Sectors for the Commune Members. Every level of leadership, in regard to those areas where private mountain land and tree-planting sectors have not been designated or insufficiently designated, must change their way of thinking. In accordance with the relevant regulations of the central committee and the provincial committee, they are to provide commune members with designated mountain land and tree-planting sectors in all places where conditions are appropriate. In those places where there are many barren mountains or sparsely wooded mountains, they must designate as much land as possible. Those places which have not designated land or which have designated too little are to undertake supplementary designating. The main substance to the work of "the three fixes" in plains areas is to demarcate three-planting sectors for the commune members. Every level of leadership must focus on the designating of tree-planting sectors as an important matter in caring for the lives and production of the peasants and decide to use the unoccupied places which are not convenient for collective management and designate them for tree planting to the commune members.

We Must Establish and Consolidate a System of Responsibility for Forestry Production Which is Suited to Local and Forest Conditions. Based on the characteristics of forest production, every locality must combine the authority, responsibility, and interests of the commune members and establish and consolidate a system of responsibility which can both give free rein to the superiority of unified management and also stimulate the individual activism of the commune members. Based upon the actual situation in our province, the afforestation reform of the barren and sparsely wooded mountains may be contracted to the household and the laborer. The economic forests where the production cycle is short may also be contracted to the household and laborer. Large tracts of commercial forests, shelter forests of every kind, and scenic forests generally should be handled by specialist teams (committees) set up by communes or production teams; or forest-protection personnel may be designated to undertake unified management and safeguarding. The nurturing and management of newly planted commercial timber or young timber may be contracted to the household and individual laborer. Whatever kind of system of responsibility for production is instituted, it should be beneficial to encouraging the commune members to go into the mountains to plant trees and create wealth. But the felling of timber and marketplace management must be unified, to prevent the unrestrained chopping down of trees and denudation. Every area must strengthen its leadership over the system of responsibility for forest production. On the basis of investigation, research and summing up experiences, they must train cadres in turn, liberate their thinking, and ensure painstaking work.

6722

CSO: 5000/4104

NATION TO ENFORCE MARINE ENVIRONMENT PROTECTION LAW

OW270627 Beijing XINHUA Domestic Service in Chinese 0116 GMT 23 Jan 83

[Excerpts] Jinan, 23 Jan (XINHUA)--The delegates who attended the national symposium of marine environmental management work recently issued an appeal: The pollution of China's marine environment is serious. All areas, enterprises and units concerned must strictly enforce the "law for the protection of the marine environment of the People's Republic of China."

This law, adopted by the Standing Committee of the Fifth NPC on 23 August 1982, will become effective on 1 March this year. Some areas still fail to understand the significance of protecting the marine environment. There still exists a situation where measures are being taken to protect the environment, while pollution is being simultaneously aggravated.

China's marine environment is polluted in varying degrees. Pollution in harbor and bay areas, where rivers enter the sea, and in some parts of the inland seas is very serious. According to a survey by a department concerned, 6 billion dun of polluted water from industry and domestic users pours into coastal waters each year, upsetting the ecological balance of the ocean. Fishing seasons no longer exist in some fishing grounds in coastal waters. The total output of marine fisheries in 1981 was 11 percent lower than in 1978.

The delegates attending this symposium pointed out: The "law for the protection of the marine environment" provides a strong backing for strengthening management over the marine environment. The areas, enterprises, and units concerned must strictly enforce related provisions of this law, consciously do a good job in protecting the marine environment, pay particular attention to combating pollution in coastal waters caused by petroleum and heavy metals and adopt immediate measures to keep the contents of noxious and harmful substances pouring into the ocean to within the limits specified by the state. The delegates also hoped: In addition to the enforcement of the law by law enforcement organs, it is also necessary to bring into full play the supervisory role of the masses to further develop the work of protecting China's marine environment.

CSO: 5000/4134

BEIJING STEPS UP TREATMENT, CONTROL OF 'THREE WASTES'

Beijing JIANKANG BAO in Chinese 19 Aug 82 p 1

[Article by Chen Enjia [7115 1869 3946]: "The Capital City Accelerates Treatment of Pollution by the 'Three Wastes,' in 1981, More than 200 Key Treatment Projects Have Been Completed, of the 469 Major Polluting Sources Along Seven Key Rivers, 420 Have Been Treated"]

[Text] During the past 2 years, the capital city has accelerated the treatment of environmental pollution, improving environmental conditions. To do the work of environmental protection in the capital city well, the municipal people's government promulgated two provisional measures to "strengthen the control of smoke and dust released by furnaces" and to "levy fees for the release of waste water" in March, 1981, which improved the work of controlling the sources of pollution. According to statistics of related departments, the city completed more than 200 key projects to treat the "three wastes" in 1981, an increase of nearly onefold over 1980. The amount of pollutants released by more than 200 units has visibly dropped or has met the state standards. Of the 469 major polluting sources along seven key rivers, 420 have been treated. Of the city's more than 12,000 furnaces and boilers, over 60 percent have been rebuilt; of the 5,600 boilers within city limits, 5,100 have been rebuilt. Of the more than 800 seriously polluting factories (shops) within Sanhuan Road, 344 polluting sources have been treated. The Beijing Special Steel Plant has also established a plantwide environmental protection network, drawn up environmental plans and regulations, and treated 48 polluting sources. After seven boilers in the four boiler rooms of the power plant of the Capital Steel Company changed to firing blast furnace coal gas, each year the amount of carbon monoxide released will be reduced by 270 million cubic meters. The city's Second Light Industry Bureau provided 700,000 yuan of its own capital to solve the problems of the "three wastes" and bothersome noise produced by enterprises of the collective ownership system. During the first half of this year, the city's First Light Industry Bureau organized an inspection group for the treatment of the "three wastes." It inspected 15 treatment projects at 14 enterprises, encouraging the treatment of environmental pollution.

9296

CSO: 5000/4078

GANSU TAKES STEPS TO REDUCE POLLUTION FROM ELECTROPLATING

Lanzhou GANSU RIBAO in Chinese 13 Oct 82 p 4

[Text] According to preliminary statistics, originally Gansu Province had 257 worksites of the electroplating industry, 112 sites have been closed, suspended, merged or retooled, amounting to 43.6 percent of the total, to reduce greatly the sources of pollution, to improve the condition of production, and to save several million yuan for the province in pollution control and treatment expenses.

Pollution from electroplating had always been severe in Gansu and the masses objected strongly. The electroplating industry earnestly implemented the policy of readjustment in recent years to carry out specialty cooperation to retire gradually some worksites. Meanwhile, 70 percent of the zinc plating units have changed the traditional procedure of using extremely poisonous sodium cyanide and replaced it with the new procedure of cyanide-free zinc plating; 60 percent of the units have adopted the method of low chromic anhydride purification instead of high chromic anhydride purification to save 60-70 percent of the chromic anhydride as well as reduce by more than 40 times the hexavalent chromium content in the wastewater. Moreover, 70 sets of chromium-containing wastewater treatment equipment have been constructed in the province with capacities of treating more than 60 percent of the total chromium-containing wastewater. At present, letters from the masses complaining about the electroplating pollution problem have obviously reduced in number. Some sections of streams that had been seriously polluted in the past and the water quality of the wells have gradually improved. In some cases the drinking water standard has been reached.

In late September, the provincial bureau of environmental protection and the provincial workers congress called an all province conference of exchanging technical experience of electroplating production and pollution control. During the conference the differences in experience were clarified, the viewpoints broadened, and the future direction defined. All participants resolved to continue to summarize experiences, to be courageously innovative, and to improve continuously to contribute to the efforts of improving the electroplating production and pollution control technology in the province.

6248

CSO: 5000/4113

## DANGERS OF ACID RAIN DESCRIBED

Beijing RENMIN RIBAO in Chinese 11 Jan 83 p 3

[Article by Wang Ziqiang [3769 1311 1730], Ministry of Urban and Rural Construction and Environmental Protection: "Be on Guard Against Acid Rain, the 'Deadly Demon in the Sky'"]

[Text] The current environmental pollution scourge which threatens social production and human health includes acid rain, which some call the "deadly demon in the sky."

The pH value is a measure of the acidity or alkalinity of a solution. When the pH of rain is below 5.6, it is acid rain; the lower the pH, the greater the acidity.

In April 1981 the Chongqing City Environmental Research and Monitoring Office began to monitor the pH of the rain in the city; it found that in 1981 the rain falling on Chongqing had an average pH of 4.64 and a minimum value of 3. A pH of 3 is similar to that of vinegar. This minimum value is worse than that in the northeastern United States, which has the worst acid rain problem in the world, with a minimum precipitation pH of 3.35.

In the summer of 1982 acid rain continued to fall, with pH values generally below 4. After the rain, the leaves of crops in a large area showed reddish-brown spots or, even died; grain shoots looked as though they had been scorched by fire.

Acid rain also seriously corrodes buildings and metal installations in Chongqing. In recent years the maintenance cycle for metal components in the electric power distribution in the central city has been halved. The stucco on the outsides of cement buildings only 3 or 4 years old is being eaten away, exposing the pebble aggregate. The cement railings of the municipal stadium, built in 1956, are already uneven, with the aggregate material exposed; an average of 0.4 mm a year of cement is being eaten away.

Readings taken at monitoring points in 25 provinces, cities and autonomous regions by environmental protection personnel revealed that 88 percent of the areas had acid rain, with the problem worsening from north to south.



Acid rain can also acidify lakes, streams and subsurface water, affecting the growth of aquatic animals and plants. In severe cases it may even cause water bodies to die, as all life disappears from them.

Under certain climatic conditions, acid rain can also produce sulfuric acid fogs, microscopic particles of which can enter the deep structure of the human lung, causing edema and sclerosis.

Acid rain knows no national boundaries. In Eastern Europe and Northern Europe it has already caused international disputes. The economic losses produced by acid rain in the United States amount to \$25 billion a year. Acid rain is truly a demon and a pest.

But where does it come from? When environmental protection fighters tracked it down to attack it, they discovered that it was caused by the discharge of unpurified combustion products of coal and oil, containing sulfur dioxide, nitrogen oxides and the like into the atmosphere, where they mixed with water vapor and underwent chemical reactions, producing sulfuric acid, nitric acid, metal salts and the like, which then return to the ground in precipitation. The main conditions for its production is sulfur dioxide.

Sulfur dioxide has a dual nature. It is valuable when utilized and poisonous when discarded. It can be used to produce sulfuric acid products urgently needed by industry and agriculture, but when discharged it not only harms people and other living things directly, but can turn into the "deadly demon in the sky."

This demon both should and should not be feared. If we carelessly neglect to deal with it, the consequences will be quite frightful. Conversely, if people understand the harm it does and seek weapons to subdue it from chemistry's treasurehouse, the way to containing and annihilating it lies before us.

Scientific research and practical experience demonstrate that economic effectiveness should be emphasized during the coal production process; high-sulfur and low-sulfur coals should be produced and transported separately, and the coal should be washed and processed, rationally distributed, and subjected to comprehensive development. Inorganic sulfur should be washed out to yield sulfur for sulfuric acid production; the organic sulfur which cannot be washed out should be recovered by means of acid removal techniques during the coal combustion process and also used to produce sulfuric acid. When coal is used for production or for domestic purposes, if the techniques of combined production of heat and power and centralized heat supply are used, and if the coal is gasified or formed and is subjected to processing to decrease smoke and flyash, then the "deadly demon" of acid rain will be annihilated.

It is calculated that setting up facilities capable of washing 100 million tons of coal a year would require an investment of about 200 million yuan. After they were built, every year 2 million tons of high-grade sulfur ore with a value of about 100 million yuan could be recovered, so that the net profit would be as high as 70 million yuan and the entire investment could be recovered in 3 years. The country would no longer have to spend large amounts of foreign exchange to

import sulfur for sulfuric acid production. In addition, the use of separate production and transport and the introduction of coal washing would extend the life of coal mines, improve coal quality, increase real coal output, and decrease the pressure on the communications and transport system, resulting in increased output and increased profits, and would achieve the optimal overall economic effect.

Let us wage a stubborn struggle against acid rain, the "deadly demon in the sky," subdue it and prevent it from doing irreparable harm to socialist modernization.

8480

CSO: 5000/4120

ATMOSPHERIC POLLUTION STUDY AT XIGU, LANZHOU

Lanzhou GANSU RIBAO in Chinese 17 Sep 82 p 4

[Article by Tian Bingshen [3944 3521 3947]" "For the First Time China Combines Atmospheric Chemistry and Atmospheric Physics To Study Air Pollution at the Xigu Region of Lanzhou Province"]

[Text] The Lanzhou, Xigu area photochemical smog pollution in-situ research project, attended by more than 170 persons representing 7 units, has successfully concluded. This was the first time in China a study of air pollution was carried out by combining the forces of atmospheric chemistry and atmospheric physics. This research project was organized jointly by the Chinese Environmental Science Research Institute and the Environmental Protection Bureau of Gansu Province.

The Lanzhou, Xigu area is one of China's petrochemical bases. Light blue smog has appeared often in summer months since 1974. The presence of photochemical smog pollution in the Xigu area has been confirmed by the atmospheric pollution monitoring unit and an epidemiological investigation. In order to understand the laws governing this type of atmospheric pollution and to study prevention and control measures, the research personnel established 18 sampling and observation stations over an area covering more than 100 km from Lanzhou City, Yuzhong County to the Honggu area, by measuring and testing more than 20 items. In order to obtain accurate and reliable data, advanced instrumentation technology was employed, including continuous ozone analyzer using ultraviolet absorption method, continuous sulfur dioxide meter using pulsating fluorescent light method, coagulation nuclear counter, aerosol mass density meter, combined spectrum-mass spectrum computer, sound radar, and moored air sounding. A research project of such a large scale involving simultaneous and synchronous sampling and observation of multiple number of parameters at a multiple number of sites, especially an undertaking involving combined forces of atmospheric chemistry and atmospheric physics such as this one, has never been attempted in China.

While the research project was under way, the lieutenant governor of the province Ge Shiyang visited the researchers on site and heard a report concerning the progress of the project.

9113

CSO: 5000/4101

## THREAT OF POLLUTION BY ELECTROMAGNETIC WAVES DISCUSSED

Guangzhou HUANJING [ENVIRONMENT] in Chinese. No 8, 1982. pp 22-23

[Article by Wu Dawei [0702 1129 0251], engineer of the Research Institute of the Shanghai Wire Communications Plant: "Phantom Electrical Waves"]

[Excerpts] When we mention environmental pollution, people often think of bothersome noise, black and stinky sewage and stifling smog in the atmosphere. These pollutants can be seen, smelled or heard and stimulate the demand for prevention and control. Pollution by electromagnetic wave radiation cannot be seen, nor touched, therefore it is not easily detected. But, in fact, this type of pollution is spreading throughout the world, and seriously threatens man's health and life, human ecologists have given it a frightening and alarming name -- "phantom" electrical waves.

Actually, all mankind lives in the midst of electromagnetic wave radiation. With the development of industry and science, electromagnetic wave radiation has become more widely used in industrial and agricultural production, military technology, medical and health sciences, scientific research, communications and broadcasting and household electrical appliances to help man accomplish one wonder after another. For example, broadcasting stations and television stations use electromagnetic waves to transmit programs so that you can sit at home and know about world events. The "eyes" of the Liberation Army -- the electromagnetic waves transmitted by the radar station can effectively monitor the vast territorial air space of the motherland. The electromagnetic waves transmitted by the "thousand li eye" control towers can guide aircraft and ships to navigate safely day and night. The "sensitive ear" of the astronomical observatory -- the radio telescope can detect electromagnetic wave radiation of the outer layers of space to discover the secrets of the universe. Orbiting telecommunications devices and satellites use electromagnetic waves to transmit information throughout the world. The family microwave oven uses electromagnetic waves to cook delicious foods.... All of these show that electromagnetic waves are useful to man.

What are the characteristics of pollution by electromagnetic wave radiation in the environment compared to occupational pollution that electromagnetic wave workers are subjected to? One is that many people are affected and the scope is wide. The second is that the time of radiation is unlimited. Even when the electrical potential is low, it can still cause cumulative chronic and functional effects upon the organs. The third is that there are compound effect of

multiple polluting factors. Pollution by electromagnetic wave radiation in the environment frequently acts jointly with such other polluting factors as noise, vibration, smoke, sewage, heat radiation, and radioactive waves. The effects produced are visibly stronger than the effects from a single factor. The fourth is that there is joint radiation of multiple frequencies and multiple methods. The environment contains various sources of electromagnetic wave radiation causing pollution simultaneously, it is very complicated.

Actual surveys show that environmental pollution by electromagnetic waves generally belongs to low electrical potential radiation. The main effects upon the human body and ecological balance are special non-thermal biological effects. Under the prolonged and slow effects of environmental pollution by electromagnetic waves with a low electrical potential, the human body produces many unfavorable physiological reactions and pathological changes. These effects can be summarized as follows: In the central nervous system, group symptoms of neurasthenia appear. Disorders of the function of the autonomic nerves occur, the biological current of the brain changes. In the visual system, visual fatigue occurs, the eyes feel uncomfortable and dry. In the reproductive system, impotence occurs in males and their sexual functions degenerate. In females, disorderly menstrual periods occur. In the cardiovascular system, tension and permeability of blood vessels surrounding the heart drop and bradycardia may occur, making it easy for cardiovascular diseases to occur and develop. In the circulatory system, the number of platelets visibly drops, the number of white cells fluctuate and tends to drop, and blood clotting time shortens. In the hearing system, long durations of low electrical potential electromagnetic wave radiation will impair hearing. In the digestive system, it can cause nausea, cause the stomach to reduce its capacity and causes indigestion. In the endocrine system, it stimulates activities in the subthalamus opticus--hypophysis cerebri--adrenal gland. It causes hyperfunction in the thyroid gland, disorders in the metabolism of organic sugars, and secretion of milk from the mother's breasts reduces. In the immunity system, the function of immunity of body fluids drops. In addition, it also causes disorders in the metabolism of nitrogen and the conversion of sugar into energy in the intestinal organs and tissues. It dulls the sensitivity of smell and raises the threshold of pain. Mutational, carcinogenic and deformation problems have been proven by large numbers of experiments in animals, and the effects upon the human body still require further studies. It can be seen that pollution by electromagnetic waves in the environment has a broad and complicated effect upon human health, this must be seriously considered.

At present, strengthening the prevention and control of electromagnetic wave pollution in the environment has become an urgent task in environmental protection work. The Human Environment Commission of the United Nations has included electromagnetic wave radiation as one of the "major pollutants causing public harm." China's environmental laws also clearly stipulate that we must protect ourselves against electromagnetic wave radiation and strictly control it. Many nations such as the United States and the Soviet Union that have a developed electronics industry have already established health standards for residents against pollution by electromagnetic waves in the environment, and have provided a scientific measure for control work. China should also quickly establish health standards against pollution by electromagnetic wave in the environment that meet national conditions, and we should strengthen efforts to monitor the degree of pollution by electromagnetic wave radiation in the

environment of large and medium cities. In view of the lessons in capitalist nations, we must strengthen control over radio transmission devices, limit the distribution of radio stations, television stations, communications stations, radar stations, the power and the frequencies within a rational range. In the future, we should not build new and additional high power broadcasting stations and television transmission stations in urban areas with a dense population, and we should gradually move those already built in urban regions to the suburbs.

9296

CSO: 5000/4076

## FAVORABLE ACHIEVEMENTS MADE IN CONTROLLING NOISE POLLUTION

Shanghai JIEFANG RIBAO in Chinese 24 Jun 82 p 2

[Article: "Our Nation Has Made Encouraging Achievements in Controlling Noise: New Theory Has Been Proposed, New Materials Have Been Developed and There Are Specialized Factories for Producing Anti-Noise Equipment"]

[Text] In order to decrease noise, China's acoustics workers have made encouraging achievements, have proposed several new theories and have studied and designed new equipment and many new materials. Many of their achievements have been popularized and a group of new factories specializing in producing anti-noise equipment have appeared throughout the nation. This information was announced the day before yesterday (the 22nd) at the conclusion of the National Acoustics Conference.

The conditions reflected at the conference indicate the following. In this country, we have formed a corps for scientific research on noise control and for design and control technology and have obtained encouraging results. The small nozzle theory, which has been studied and proposed by one of our nation's noted acoustics experts Professor Ma Dayou [7456 1129 3731], has as the result of many years of practice been demonstrated to be markedly effective in lowering high-pressure exhaust noise. In addition, many types of small-size, light-weight exhaust mufflers with good noise elimination effects have been developed. The micropore plate muffler, which was developed by the Acoustics Institute of the Chinese Academy of Sciences, has been used in many areas internally and has solved the problem of noise elimination in piping under conditions of high temperature and high humidity. A new technique of reducing noise using space sound absorption plates that was developed by the Shanghai Industrial Construction Design Institute has generally been recognized as a new technique with comparatively high sound absorption efficiency and economic benefit.

As noise control technology has developed, a new noise control equipment industry has gradually been formed in this country in recent years, and there are about 40 specialized plants in the country for producing this type of equipment. At present, a series of close to 10 types of mufflers are being produced domestically. Scientific research work on noise control in this country is in the process of developing from single phase control to

comprehensive control, from local control to integral comprehensive control and from stopgap measures to permanent measures.

At the conference, information about many new achievements were exchanged among specialists in such fields as marine acoustics, ultrasonics and electroacoustics. Through a democratic election, Professor Ma Dayou was chosen to be the new director of the Chinese Acoustics Society.

10019

CSO: 5000/4063



## CHEMICAL POISONS DISCOVERED UNDER MUDANJIANG

Harbin HEILONGJIANG RIBAO in Chinese 1 Aug 82 p 1

[Article by reporter Zhou Jing [0719 6975]: "Chemical Poison Discovered Underground in Mudanjiang City, Antichemical Warfare and Local Personnel Cooperated, All of the Poisons Were Removed by 21 July"]

[Text] Large quantities of chemical poisons buried underground in the mid section of Guanghua Road in Mudanjiang City were completely removed by 21 July after 4 days of intense work by antichemical warfare soldiers of a certain military branch stationed in the city. According to the urban construction department and antichemical warfare units of a certain military branch stationed in the city, the poison was left by the Japanese during their occupation of northern China before their surrender. At 1800 hours on 16 July, civilian workers who were digging ditches on this section of the road for laying underground pipes discovered three iron cans in the soil layer over 2 meters underground. Each can was 1 meter long and had a diameter of about 50 centimeters. A copper cap was twisted off and a brown fluid gushed out from the can splashing the hands, faces and clothes of the civilian workers. At the time, the workers did not feel strange, but by midnight, a red rash occurred on the parts of the skin that came into contact with the liquid and fumes from the can. The rash turned into blisters, water emerged from the blisters and the skin began to ulcerate. By the afternoon of 17 July, five people were hospitalized. Comrades of the city's quarantine station believed the poison was toxic mustard gas, its toxicity lies in its blistering nature and is extremely dangerous.

On the morning of 18 July, the city's leaders sent representatives to the military branch stationed in the city to seek help. The military branch immediately dispatched deputy chief of staff Liu Xuezhi [0491 1331 2535], he led antichemical warfare cadres and soldiers, brought equipment and rushed to the scene, work began in the rain. The local authorities also sent men from the public security branch, the urban construction department, the health department and the environmental protection department to participate in the struggle to remove the poison. At 0500 the next morning, while disinfecting the scene and draining the poison, an even larger can of poison was found, on-site tests could not reveal the nature of the contents. Some of the antichemical warfare soldiers

cooperated with the local departments and worked for several hours. Late that night, the poisonous substance was transported safely to the northwest hills 30 li from the city. After 2 days of hard and dangerous work, they satisfactorily completed the task of destroying the contents. At the same time, other soldiers searched the bottom layer of the ditch where the poison was found, they joined firefighters in thoroughly disinfecting the ditch and city traffic was restored. The Shenyang Military District sent health officials to help the military branch hospital in the city to treat injured civilian workers. While removing the poison, the provincial government telephoned to express its interest in the work of removing the poison.

9296

CSO: 5000/4075

## FIRST PRC-U.S. ENERGY, ENVIRONMENT CONFAB OPENS

OW081349 Beijing XINHUA in English 1225 GMT 8 Nov 82

[Text] Beijing, November 8 (XINHUA) -- The first China-U.S. conference on energy, resources and environment opened here today.

The conference is concerned with the future of energy resources and development of usable energy resources, as well as the associated environmental implications. The relationship between energy resources and economy and society are also topics to be discussed at the conference.

Sponsored jointly by the China Association for Science and Technology (C.A.S.T.), China Energy Research Society (C.E.R.S.), U.S. Society of Engineering Science and U.S. National Academy of Engineering, the conference brings together more than 350 experts and professors. The participants come from China, the United States, Bangladesh, Bolivia, Brazil, Canada, Denmark, Djibouti, Egypt, the Federal Republic of Germany, France, Iran, Italy, the Netherlands, Puerto Rico, Sweden, Tanzania, Thailand, the United Kingdom and Hong Kong region. The largest national delegations are 190 from China and 105 from the U.S.

Also attending the opening ceremony today were members of the advisory committee of the conference including Wu Zhonghua, executive chairman of the Presidium of the Chinese Academy of Sciences, Zhang Wei, vice-president of the C.A.S.T., and Hou Xianglin, advisor of petroleum studies to C.E.R.S., and Leonard Woodcock, former U.S. ambassador to China, Alfred J. Eggers, chairman of Rand Inc., Robert Seamans, professor of the Massachusetts Institute of Technology, Melvin Carvin, professor of the University of California, and Earnest Dloyna, dean of the engineering University of Texas.

Zhu Yajie, vice-president of the C.E.R.S., presided over the opening ceremony. The co-chairmen of the conference Lin Hanxiong, president of the C.E.R.S. and Shao-wen Yuan, past president of the U.S. Society of Engineering Science, addressed the opening ceremony.

Lin Hanxiong said that development of natural resources and the supply of fuels and raw materials were of critical importance to China's modernization drive, and that China would cooperate with other countries in this field.

After the opening ceremony, Leonard Woodcock, currently a professor at the University of Michigan, was invited to speak at the conference.

The former ambassador said that international cooperation would be needed in tapping the physical resources present in abundance throughout the world to solve the energy problem.

More than 70 papers will be presented at the conference on such energy resources as coal, petroleum, hydro-electricity, methane, solar energy, wind, nuclear energy, geothermal energy and chemical fuels.

The five-day conference will run through November 12.

CSO: 5000/4130

BAI DONGCAI CALLS ON SYMPOSIUM PARTICIPANTS

OW181403 Nanchang Jiangxi Provincial Service in Mandarin 1100 GMT 17 Nov 82

[Text] According to JIANGXI RIBAO, the first national symposium on ecological economy ended in Nanchang on 13 November after 8 days in session. The symposium received 74 academic papers. By holding plenary session and group discussions, the symposium dealt with the following questions:

1. The definition and role of ecological economy and its importance in economic construction.
2. The past guiding ideology that ignored the combination of economic and ecological education has resulted in an ecological imbalance, environmental pollution and economic losses.
3. Academic suggestions to be made to the central authorities for the protection of various natural resources, the preservation of ecological balance and the development of the economy as well as measures to disseminate ecological knowledge among the cadres and masses and to train ecological economists.

During the symposium, noted economists Xu Dixin and Yu Guangyuan were invited to give lectures in the units concerned in Jiangxi. Professor Hou Xueyu, noted ecologist, held a discussion with scientists and technicians in our province. Xu Dixin, Yu Guangyuan, Ma Shijun, Hou Xueyu and other old scholars and experts also made an inspection tour of Poyang Lake.

During the symposium, Bai Dongcai, Fu Yutian and Zhao Zengyi, leading comrades of the Jiangxi Provincial CPC Committee, called on the representatives attending the symposium and also discussed problems in the province's economic construction with noted scholars and experts.

The symposium approved the academic suggestions to be made to the central authorities for the protection of various natural resources, the preservation of ecological balance and the development of the economy.

CSO: 5000/4123

## BRIEFS

HUBEI ENVIRONMENTAL PROTECTION FORUM--The first Hubei provincial forum on agricultural environmental protection and the supervision of the sanitation of agricultural tools and products concluded on 13 October. The forum held that importance should be placed on controlling pollution. In the past, because importance was not sufficiently attached to agricultural environmental protection, serious pollution was caused by residue, exhaust gas and waste liquid industry and by agricultural chemicals, and agricultural environment and agricultural tools and products in some places were in poor sanitary condition. This jeopardized agricultural production and the people's health. All places must, therefore, attach great importance to this work, strengthen leadership and overcome difficulties. They must strive to promote agricultural environmental protection work. The forum held that the province should step up investigation, exercise control over the use of agricultural chemicals and chemical fertilizers, prevent fields from being contaminated by unprocessed waste liquid in industry, conduct investigation and deal with major contamination incidents, protect natural resources in agriculture, maintain the ecological balance and conduct research in agricultural environmental protection. [Wuhan Hubei Provincial Service in Mandarin 1100 GMT 15 Oct 82 HK]

SHAANXI TACKLES INDUSTRIAL POLLUTION--Recently, the provincial economic commission and the provincial environmental protection bureau held a meeting in Xian on tackling industrial pollution in the province. The meeting demanded that all enterprises vigorously carry out the activities against pollution and strive for an improvement in the province's environmental protection. At the meeting, the provincial office of national defense industry, the provincial bureau of petroleum and chemical industry, the Xianyang Prefectural Bureau of Environmental Protection and the Tongchuan Municipal Bureau of Environmental Protection introduced their experiences in preventing pollution. To sum up, these experiences are: 1. leaders at all levels must place on the agenda of work the prevention of pollution; 2. in tackling pollution, the principle of self-reliance and each unit handling its own pollution should be adhered to; 3. closely integrate environmental protection with the development of production; 4. do a good job in comprehensive utilization and change industrial waste into useful products; 5. in connection with the straightening out of enterprises, place environmental protection under business management. [HK151459 Xian Shaanxi Provincial Service in Mandarin 1130 GMT 14 Oct 82 HK]

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