(1)

MINISTRY of TECHNOLOGY

Warren Spring Laboratory

AD689078

Air Pollution Abstracts

January 1969

53

Ministry of Technology

WARREN SPRING LABORATORY

AIR POLLUTION ABSTRACTS

January 1969

1. General
2. Emissions and sources
3. Identification and measurement
4. Distribution (surveys, chimney heights, meteorology)
5. Effects on humans, animals, vegetation, etc
6. Administration (programmes, standards, legislation)
7. Methods and equipment for abatement
8. Miscellaneous

The original papers to which these abstracts and titles refer can in most instances be obtained through the local public library. In case of difficulty enquirers may refer to Warren Spring Laboratory. Only items marked (L) or with a five digit number prefaced by a letter are available in Warren Spring Laboratory Library.

Abstracts covering the whole field of fuel technology appear in "Fuel Abstracts and Current Titles" obtainable on subscription from the Institute of Fuel.

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STEVENAGE, Herts.

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ACKNOWLEDGEMENTS

In addition to original sources, the following abstracts journals have been used:

AA	Analytical Abstracts, May 1968
APCA	Air Pollution Control Association Abstracts, August 1968
CA	Chemical Abstracts, 3 June 1968, 10 June 1968, 17 June 1968, 24 June 1968
FA	Fuel Abstracts
NCB	National Coal Board Abstracts A, May 1968

January 1969

CORRIGENDA: December 1968 Issue of Air Pollution Abstracts:

Abstract A 12262: The last three lines were omitted; the complete abstract is reproduced below.

Abstract A 12280: The original journal reference was missed out; it is given in the corrected abstract below.

A12262 02049, 02615, 03046, 03120, 03423, 03770, 03959, 04009, 05161

Dubois, L. et al.

SULPHUR COMPOUNDS IN URBAN AIR

(APCA)

Air Pollution. Proc. Symposium on the Physico-chemical Transformation of Sulphur Compounds in the Atmosphere and the Formation of Acid Smogs. Paris, Organisation of Economic Co-operation and Development, Directorate for Scientific Affairs, Paper S. 63–73 (Dec. 1967).

Three sampling stations were set up using glass fiber filters. All filters were carefully washed to reduce the relevant blank levels as much as possible. Measurements were made of dust loading, lead, polycyclics and sulfate. Using hot aqueous extraction, sulfate blank values were determined on a large group of glass fiber filters. Sulfate blanks on organic filter media are much lower than for the glass fiber type. Suitably low blanks have only been achieved for polycyclic, lead and sulfate blanks. Results currently being obtained for sulfate in air are shown in histograms. The effect of wind direction has been applied to the results. There seems to be a rough correlation between the three stations. Peaks tend to occur on weekends. Dust and sulfate air loadings are given in tables.

(contd)

A12262 (contd)

Values are summarized for three months, with some average values for the same months obtained 10 years previously in the same city at another location one mile distant. Glass fiber sheet appears to be quite unsuitable for the measurement of sulfate or sulfuric acid in air since it is analytically unsound to try to measure sulfate if the total sulfate blank is as large, or larger, than the quantity being measured.

A12280 02036, 02427, 03735, 03777, 05120

Podlaha, M.

AIR POLLUTION BY SULPHUR DIOXIDE IN NORTHERN BOHEMIA. (In Czech)

(CA) Cesk. Hyg., 1968, vol. 13, (1), 33–36.

Statistical evaluation of exptl. data shows that in certain periods of 1965–6 the SO_2 concn. exceeded 0.30 mg./m.³ air.

I. General

A12407 02047, 02386, 02416, 02921, 03243, 03312, 03320, 03374, 03697, 05600, 05810, 05960

Fiero, G.W.

AIR POLLUTION AND PROTECTIVE COATINGS
(APCA)

J. Paint Technol. 40 (520), 222-8 (May 1968).

Man-made air pollutants are largely products of combustion. Photochemical smog prevalent in Los Angeles results from inter-reaction between oxides of nitrogen, reactive hydrocarbons, and oxygen. Hydrocarbons vary greatly in their reactivity; hydrocarbons found in solvents are less reactive than auto exhaust. Data are included on common air pollutants in Houston, Dallas, and Washington. So far, Rule 66-type regulations have not been adopted anywhere other than California. New York, New Jersey, and Pennsylvania regulations and proposed rules are discussed. Industry must cooperate with local authorities to reduce general air pollution. The National Paint, Varnish and Lacquer Association (NPVLA) smog chamber at Battelle Memorial Institute should provide data relative to the extent solvents add to photochemical smog.

A12408 02040, 02214, 02271, 02386, 02392, 02519, 02964, 03201, 03754, 03876, 04009

Rydell, C.P. and Schwarz, C.

AIR POLLUTION AND URBAN FORM: A REVIEW OF CURRENT LITERATURE
Reprint from J. Am. Inst. Planners, March 1968, vol. 34, (2), 45 refs, (P 12297)

The relation between city structure and the urban air pollution problem is discussed with reference to the literature, particularly from the point of view of designing cities so as to minimize the pollution of the air. Factors considered include, appropriate construction of buildings and streets, location of industrial sites, and allowing for existing topographical and climatological features.

A12409 02040, 02353, 02921, 03241, 03312, 03777, 05250

Suzuki, S. and Kikuchi, S.

CHEMICAL PROBLEMS IN AIR POLLUTION. (In Japanese)
(CA)

Seisan-Kenkyu 20(2), 52-64(1968)

The major air pollutants are SO_2, NO_x, CO, hydrocarbons, dust, etc. In Japan the primary concern is SO_2 pollution. The pollution is more substantial in regard to the energy sources projected in the future. SO_2 has a max. absorption at 3880 A. and min. 3740 A. SO_2 is not decomposable through the photochem. reaction in sunlight, but it can be oxidized in the presence of O. The oxidn. rate increases by a factor of 1.2 for each increment of 10°. The reactions of SO_2 and hydrocarbon, or N oxides were also studied.

A12410 02030, 02040, 03799

Ubbelohde, A.R.

A DISCUSSION ON SCIENCE AND TECHNOLOGY OF AEROSOL POLLUTION: Introductory Remarks
Proc. Roy. Soc. A, 29 Oct. 1968, vol. 307, 139-140, 1 ref. (L)

Introduces papers presented at the above-named discussion which was organised by A.R. Ubbelohde and T.M. Sugden and was held on 29 Feb. 1968, and to which this entire issue of the Proc. Roy. Soc. (p. 137-234) is devoted.

(For abstracts of the papers, see A 12411, A 12416, A 12418, A 12498, A 12530, A 12561, A 12567).

A12411 02030, 02040, 02516, 02594, 02692, 02927, 03030, 03658, 03777, 03826

Wilson, M.J.G.

INDOOR AIR POLLUTION
Proc. Roy. Soc. A, 29 Oct 1968, vol. 307, 215-221, 10 refs. (L)

Air pollutants were liberated in a laboratory, and the decay of concentration was measured by standard methods during the return to equilibrium. Half-lives corrected for air leakage were as follows: hydrogen chloride 7 min; sulphur dioxide 40 to 60 min; smoke 145 to 300 min. The half-life and equilibrium concentration of sulphur dioxide could be reduced by changing the conditions. The results are compared with published work on pollution in dwellings.

2. Emissions and sources

A12412 02960, 03779; 02425, 02746, 03184; 02638, 02681, 03243; 02642, 03526; 03536; 05140; 05250; 05161

A.S.M.E.

PROCEEDINGS OF 1968 NATIONAL INCINERATOR CONFERENCE

(APCA) American Soc. of Mechanical Engineers, United Engineering Center, 345 East 47th Street, New York, N. Y. 10017. (1968). 365 pp.

Contents: Use of mathematical planning models to predict incineration requirements. J. H. Bacher and E. D. Ranard. Potential advantages of incineration in fluidized beds. R. C. Bailie, D. M. Donner, and A. F. Galli. Incinerator ash-criteria of performance. I. G. Bowen and L. Brealey. Conditioning refractory furnace gases for electrostatic precipitator application. R. L. Bump. The effects of the operating variables and refuse types on the emissions from a pilot-scale trench incinerator. J. O. Burckle, J. A. Dorsey, and B. T. Riley. Considerations in incinerator design with respect to community acceptance. H. J. Campbell, Jr. and A. L. Friedland. The consultants role in furnace design and selection. V. J. Cerniglia. The chemistry of incinerator slags and their compatibility with fireclay and high alumina. G. H. Criss and A. R. Olsen. Further investigation of refractory compatibilities with selected incinerator slags. Part II. G. H. Criss and A. (contd) R. Olsen. Effluent water from incinerator flue-gas scrubbers. F. L. Cross and R. W. Ross. Experiences with refuse incinera-

A12412 (contd)

tion in Europe. Prevention of air and water pollution, operation of refuse incineration plants combined with steam boilers, design and planning. H. Eberhardt and W. Mayer. Burning rates in incinerators. Part I. A simple relation between total volumetric and area firing rates. Part II. The influence of moisture on the combustion intensity. R. H. Essenhigh. Incineration air pollution control. J. H. Fernandes. Service requirements of a modern, large refuse incineration plant. W. Fichtner and F. Martin. Regional districts for incineration. F. L. Heaney. The incineration of bulky refuse II. E. R. Kaiser. Prevention of fused deposits on incinerator walls. E. R. Kaiser and W. B. Trautwein. Municipal incinerator refuse and residue. E. R. Kaiser, C. D. Zeit, and J. B. McCaffery. Influence coefficients to relate municipal refuse variations to incinerator design. P. W. Kalika. Incineration of epoxy glass laminates to recover precious metals. B. F. McLouth, H. J. Paulus, and A. J. Roberts. Conversion factors for source emission measurements of incinerator flue gases. A. Marshalla, G. Crawford, and M. Nolan. The practice of refuse incineration in Japan. K. Matsumoto, R. Asukata, and T. Kawashima. Incinerator waste water. F. E. Matusky and R. K. Hampton. The incineration of aqueous wastes. E. S. Monroe, Jr. Special factors involved in specifying incinerator cranes. W. R. O'Malley. Suppression of the (contd)

A12412 (contd)

steam plume from incinerator stacks. F. W. Rohr. The large plants for incineration of domestic refuse in the Paris metropolitan area. H. Rousseau. Scale up of combustion pot behavior by dimensional analysis. T. R. Satyanarayana Rao, G. Gelernter, and R. H. Essenhigh. Classification of incinerator residue. R. J. Schoenberger and P. W. Purdom. Special techniques for analyzing solid waste or incinerated residue. R. J. Schoenberger, N. M. Trieff, and P. W. Purdom. Factors involved in the design of high rise chimney and chute systems. J. F. Schulz. Mechanical draft fans for the modern incinerator. A. Silva. Performance and design data for large European refuse incinerators with heat recovery. G. Stabenow. Incinerator design with operator in mind. J. W. Stephenson. Temperatures and air distributions in large rectangular incinerator furnaces. R. F. Sternitzke and M. Dvirka. Instrumentation systems for municipal refuse incinerators. J. D. Stickley. Pneumatic conveying for incineration of paper trim. E. K. Tanzer. The Federal Solid Wastes Program. D. Vaughn and J. Black. Experience in conducting an incinerator technology course. C. E. Weber. Combustion profile of a grate-rotary kiln incinerator. P. H. Woodruff and G. P. Larson. Commercial incinerator design criteria. R. E. Zinn and W. R. Niessen.

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A12412 02960, 03779; 02425, 02746, 03184; 02638, 02681, 03243; 02642, 03526; 03536; 05140; 05250; 05161

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A12412 (contd)

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A12412 (contd)

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A12413 02017, 02030, 02054, 02320, 02786, 02921, 03015, 03243, 05814

Anon.

AIRCRAFT: EMISSIONS IN LOS ANGELES

Air Engng, May 1968, vol. 10, 23. (L)

AIRCRAFT in Los Angeles County daily emit about 40 tons of hydrocarbons, 19 tons of oxides of nitrogen, and 190 tons of carbon monoxide. Of the total daily emissions of these contaminants from all sources, aircraft's contribution is about two percent. Aircraft also emit 25 tons per day of particulate matter, comprising about 20 percent of the total emissions of this type of contaminant. The Los Angeles County Air Pollution Control District has begun preliminary tests of fuel additives to reduce aircraft emissions. The Ethyl Corporation has provided fuel and additives as well as technical assistance. The Federal Aviation Administration is also a participant in the jet aircraft emissions study.

A12414 02017, 02040, 02043, 02416, 02681, 02682, 02786, 02787, 02788, 03511, 03775

Anon.

FUELS, A SPECIAL REPORT

(APCA)

Power 112 (6), S1–S48 (June 1968).

With fuels so fundamental to our very existence, this report takes a broad yet detailed look at present technology, starting with an evaluation of energy demands, then on through the many steps leading to the application of these fuels. All fuels are considered—coal, gas, oil, nuclear.

In the section, "Pollution's Challenge" (S35–S45) the problems related directly to pollution control are reviewed. The combustion of fuel creates the largest single class of air pollutants running the gamut from boiler flue gas to automobile exhaust. In nuclear power plants constant vigilance must be exercised to avoid potential radioactive contamination. Desulfurization of fossil fuels, treatment of flue gas, application of additives to the fuel or by injection to the combustion zone, all are methods which have a place in the practical scheme of pollution control.

A12415 02145, 02205, 02316, 02407, 02683, 02692, 02795, 03425, 03566

Bolotova, M.N., Davydov, Y.S. and Nikishina, N.O.

BASIC INDUSTRIAL SOURCES OF THE CARCINOGENIC HYDROCARBON, BENZO[a]PYRENE. (In Russian)

(CA)

Med. Zh. Ush. 1967(11), 51–4.

A no. of plants was studied which process thermally combustible raw materials, cardboard, carborundum, asphalt, phonograph records, and rubber products. The presence of benzopyrene was detd. by its quasilinear spectrum, quant. analysis was carried out with the addn. method with photographic recording of spectra. Air in the cardboard works contained (mean values) 120.3 γ/100 m.^{3} of benzopyrene in the pitch-boiling plant, 24.8 on the premises, 12.9 at a distance of 100 m., and 4.7 at the distance of 500 m. from the plant. Air in the crushing plant of carborundum works contained 80, in coke furnaces 57.0, 500 m. from the furnaces on southern side 12.4 γ/100 m.^{3} of benzopyrene; chief sources of the latter were products of incomplete combustion of C materials, while no benzopyrene was detected in final products. Smokes from the 2 plants were chief sources of pollution of air in Tashkent by carcinogens. The highest concn. of benzopyrene in the phonograph record works was in the Vinylite plant (mean (contd)

A12415 (contd)

value 516.0 γ/100 m.^{3}), despite installation of elec. filters. The benzopyrene content in rubber product plants was 4.7 to 1.68 γ/100 m.^{3}, depending on the distance from the plants. No benzopyrene was detected in asphalt products plant or waste.

2. Emissions and sources

A12416 02017, 02030, 02172, 02328, 02468, 02543, 02682, 02788, 02921, 03015, 03046, 03359, 03658, 03806

Burt, R. and Thomas, A.

AEROSOL POLLUTION FROM INTERNAL COMBUSTION ENGINES

Proc. Roy. Soc. A, 29 Oct. 1968, vol. 307, 183-194, 16 refs. (L)

In this paper, each type of internal combustion engine in general use is briefly reviewed, and the extent to which it pollutes the air with aerosols is indicated. Then each type of pollutant is considered in turn. Solutions to the problems of aerosol pollution by the internal combustion engine may involve equipment development, fuel development, or a combination of both.

A12417 02204, 02205, 02386, 02399, 02416, 02456, 02520, 02682, 02683, 02690, 02787, 02788, 03201, 03566

Cleary, G.J.

THE CONTRIBUTION OF DIFFERENT SOURCES TO POLLUTION BY POLYCYCLIC AROMATIC HYDROCARBONS

(APCA)

Clean Air 2 (1), 13-17 (Mar. 1968).

The contribution from automobile exhausts, coal combustion sources, products from the combustion of gaseous and liquid fuels, rubber, and incinerator effluents to atmospheric pollution by polycyclic hydrocarbons is examined briefly. Concentration ratios for the compounds 3,4-benzopyrene to 1,12-benzoperylene and for 3,4-benzopyrene to coronene are used to examine the mode of pollution in Sydney and to compare this pattern with other cities in Great Britain and the United States of America.

A12418 02008, 02068, 02201, 02353, 02416, 02729; 02030, 02316

Homann, K.H. and Wagner, H.G.

CHEMISTRY OF CARBON FORMATION IN FLAMES

Proc. Roy. Soc. A, 29 Oct. 1968, vol. 307, 141-152, 31 refs. (L)

Studies were carried out on the formation of carbon and carbon compounds (e.g. CO) in benzene, heptane and acetylene flames in air. (Paper read at the Discussion on Science and Technology of Aerosol Pollution, 29 Feb. 1968).

A12419 02124, 02204, 02205, 02682, 03201, 03359

Jaeger, J.

OCCURRENCE OF 3,4-BENZPYRENE, ANTHANTHRENE AND 1,12-BENZPERYLENE IN EXHAUST GASES OF FOUR-CYCLE GASOLINE ENGINES. (In Czech)

(APCA)

Cesk. Hyg. (Prague) 11 (9), 567-70 (1966).

The levels of 3,4-benzpyrene, anthanthrene, and 1,12-benzperylene were quantitatively determined by fluorospectroscopy at −197°C, in exhausts from two Czech automobiles. Exhaust from one car contained 126–184 μg/g solids of 3,4-benzpyrene, while levels from the other car were 70.5 μg in city traffic, 1.3 μg during up-hill driving, and 5.1–21.5 μg in highway driving. Test stand results (braking tests) showed that the levels of all three hydrocarbons were highest at 1000 rpm with no load and lowest at 3000 rpm with 13% load. The ratio of 3,4-benzpyrene to 1,12-benzperylene ranged from 0.25 to 0.44 and that of 3,4-benzpyrene to anthanthrene from 1.31 to 4.87. The lower ratios occur when testing at low speed with no load and the high values at high speed with load. Low ratios therefore indicate a high degree of air pollution. Thus, the differences in the ratios for these hydrocarbons, as determined by other authors, who did not consider the operating factors, are explained.

2. Emissions and sources

A12420 02386, 02416, 03526; 02318, 02320, 02925, 02960, 03137

Kaiser, E.R and Friedman, S.B.

THE PYROLYSIS OF REFUSE COMPONENTS

(APCA)

Combustion 39 (11), 31-6 (May 1968).

During the heating of organic refuse out of contact with air, water, gases, and liquids are evolved, leaving a char residue. Ten refuse components for domestic waste were distilled on a laboratory scale, the gaseous products were analyzed and the yields determined. The gases include mainly CO_2, CO, H_2, CH_4, with mixture calorific values of 300-400 Btu/standard cu ft. The yield weights were roughly equally divided among water, gas, organic liquids, and char. The rate of heating affected the yields. Increased heating rates decreased the char, H_2O and CO_2, and increased CO. The highest gas yields may be expected from flash heating.

A12421 02386, 02960

Kirov, N.Y.

DISPOSAL OF MUNICIPAL REFUSE BY INCINERATION

(APCA)

Clean Air 2 (1), 5-11 (Mar 1968)

The problem of hygienic refuse disposal, which is of major and growing concern to municipal authorities, is a direct consequence of population growth and technical advances characterizing our present day industrialized civilization. For reasons given in the paper, incineration of municipal refuse by modern high-temperature techniques has become, during the past fifteen years, the preferred method of refuse disposal in most of the large cities of the world. An outline of the objectives of high-temperature incineration is followed by considerations of refuse as a fuel and of the basic requirements for its efficient combustion. The main part of the paper, however, is concerned with the advances and principal design features of modern incinerator plant and of the various firing systems which have led to the successful developments in municipal refuse incineration practice throughout the world.

A12422 02040, 02214, 02684, 03201

Larsen, R.I.

AIR POLLUTION FROM MOTOR VEHICLES

(CA)

Ann. N.Y. Acad. Sci. 136(12), 277-301(1968)(Eng). A review with 88 references. Suggestions for control of such pollution are presented.

A12423 02030, 02094, 02714, 03232, 03374, 03692; 03840, 03851, 03990; 02400

Petriconi, G.L., Garl, E.G. and Papee, H.M.

PHOTOLYSIS OF AMMONIUM NITRATE SOLUTIONS BY SUNLIGHT

(CA)

Ric. Sci. vol.37, (11), 979-83 (1967)

A good natural fertilizer, NH_4NO_3, forms aerosols which are decompd. by solar near-uv, forming H_2O, N_2, and N_2O. This reaction is enhanced by chlorides and is, therefore, likely to be enhanced in mountainous and maritime environments.

(Abbreviated abstract)

A 12424 02787, 02921, 03272, 03325, 03358, 03374, 03692
Stephens, E.R., Darley, E.F. and Burleson, F.R.
SOURCES AND REACTIVITY OF LIGHT HYDROCARBONS IN AMBIENT AIR
(CA)

Proc. Div. Refining, Amer. Petrol. Inst. 47, 466-83(1967)(Eng). Recent measurements of low mol. wt. hydrocarbons in ambient air samples are described. The disappearance of individual hydrocarbons under irradn. with artificial and natural sunlight in such samples was also measured. Substantial reaction of both olefins and paraffins occurs during the course of irradn. for 1 day. Although the reactivity of the olefins is higher than that of the paraffins, the latter group makes a significant contribution to total reactivity because the amt. initially present is relatively large. The anomalously large amts. of the lightest paraffins (propane in particular) was further investigated by analyzing samples near and far removed from oil fields. The results did not clearly reveal the source of these paraffins but it now seems probable that gasoline evapn., natural gas leakage, and oil field losses may all contribute. A correlation technique permitted the identification of natural gas in some sets of early morning ambient air samples.

A 12425 02119, 02468, 02682, 02684, 02921, 03201, 03654; 02914
U.S. California State Air Resources Board
HORSEPOWER AND HYDROCARBONS
Los Angeles: The Board; colour film, 24 minutes running time.
(Air Engng, May 1968, vol.10, 13).

Filmed by the Motion Picture Department of the University of California at Los Angeles, the picture deals, in depth, with the automobile as a main source of aerial contamination, and the principal source of what has come to be known the world over as "photochemical smog." Animated segments describe the functions, operations, and efficiencies of automotive crankcase and exhaust emission control systems. Also shown is the growing health threat of polluted air to humans and animals and it graphically delves into other hazards posed by a contaminated atmosphere.

A 12426 02320, 02646, 02682, 02921, 03201, 03243
Wise, C.E.
SSSST: STEAM IS BACK
Mach. Des., 29 Aug. 1968, vol. 40, (20), 20-21. (L)

THE STEAM ENGINE. It offers the best solution yet to the air-pollution problem attributed to automobiles. Its performance as a vehicle powerplant meets or exceeds that of the gasoline engine. It requires no complex ignition, carburetion, exhaust, or transmission components. Its maintenance needs are practically nil. Why doesn't the auto industry show more interest?

One reason is that some of these facts are debatable.

Probably the best known contemporary steam powerplant, designed specifically for automotive propulsion, is the Williams. Hydrocarbon emissions of the Williams engine were found to be 30 to 40 ppm, compared to the 275 ppm limit required in the 1968 cars. Carbon monoxide level was 0.3%, or one-fifth of the 1.5% limitation. Oxides of nitrogen in the Williams-engine exhaust range between 25 to 35 ppm, while present vehicles emit between 1,500 and 3,000 ppm.

See also: A 12404, A 12407, A 12434, A 12455, A 12471, A 12474, A 12485, A 12517, A 12530, A 12532, A 12533, A 12547, A 12565

3. Identification and measurement

A12427 02353, 02613, 02683, 02722, 03576, 03780
Baum, F. and Beine, H.
THE AMOUNT OF SULPHUR TRIOXIDE ACCUMULATED ON FIBRE-GLASS FILTERS USED FOR DETERMINING DUST CONTENT IN FLUE GASES. (In German)
(CA)

Gesundh. Ing. 88(11), 350-3(1967)(Ger). The nature of the sorption of SO_3 by glass-fiber filters used for dust sampling was investigated. All SO_3 accumulated on paper filters can be detd. by titrn. with NaOH, but not in the case of glass fiber filters. A chem. reaction of SO_3 with the glass fiber was presumed. To det. the effects of time and temp. on the amt. of SO_3 accumulated in the glass fibers, samples were placed in N H_2SO_4 and held at 20° for various periods of time or held 6 hrs. at various temps. (20-98°) and the amt. of H_2SO_4 consumed was detd. by titrn. with N NaOH. The amt. of SO_3 accumulated by the glass fibers increases only slightly with increase of time at 20° but the increase is great as the temp. is increased.

A12428 03428, 03576
Boltin, R.L., et al.
COMPACT AIR SAMPLER FOR EMERGENCY USE
(APCA)

Health Phys. 14 (6), 508 (June 1968).
A compact, versatile air sampler was designed to fit into a suitcase of emergency equipment. The sampler operates from any 12-volt source, samples at 4 cfm using 4 × 9 in. HV-70 filter papers. A flowmeter, consisting of a pitot tube and inexpensive airflow measuring device, is provided.

A12429 02028, 02050, 03799
Clayton, C.D.
AEROMETRIC TECHNIQUES
J. Air Pollut. Control Ass., July 1968, vol. 18, 444. (L)

Summary of paper read at the Symposium on Air Quality Criteria, New York, 4-5 June 1968. Makes suggestions on the setting up of an air-sampling network and comments on the need for exercising great care when evaluating aerometric survey data.

A12430 02030, 02625, 03331, 03576, 04009
Davies, C.N.
THE ENTRY OF AEROSOLS INTO SAMPLING TUBES AND HEADS
Brit. J. Appl. Phys., July 1968, vol. 1, ser. 2, 921-932, 16 refs. (L)

Tube sampling can be classified into 'small tubes', which give the same results independent of their orientation, and 'large tubes' where there is a change of sampling efficiency when the direction of the tube is altered.

The limits of radius of a 'small tube' sampling with an efficiency near to 100% are laid down in terms of particle size and suction speed; tables are given for evaluating the sampling efficiency in a wind. Calm air is defined by the wind speed being less than a value which is dependent on the sampling speed and particle size.

The sampling efficiency of a 'large tube' may depend on its orientation owing to the fall of particles due to gravity or to a wind blowing past the tube. Isokinetic sampling is necessary to obtain correct samples in strong winds; the effect on efficiency of sampling due to departure from the isokinetic conditions is discussed.

The conditions are deduced for accurate sampling with a bulky suction head containing a small orifice: if the orifice faces downwards a critical suction speed exists below which no sample is obtained; at higher speeds sampling is selective and depends on the falling speed of the particles.

(contd)

A12430 (cont.)

When a bulky head is used in a cross wind there is no effect due to wind when the orifice is in the top. For a downwards facing orifice the effect of wind is to cause sampling to start at a lower rate of suction and to be more efficient at lower rates of suction. At high rates of suction the wind has no effect.

3. Identification and measurement

A12431 02030, 02150, 02552, 03576, 03882, 04032
Dotson, W.L., Nickola, P.W. and Wolf, M.A.

REAL TIME SAMPLING OF ZINC SULPHIDE TRACER IN DIFFUSION STUDIES
(CA)

U.S. At. Energy Comm. BNWL-SA-1407. Avail. Dep.; CFSTI, 19 pp.(1967)(Eng). A real time sampler was developed for the measurement of instantaneous atm. concns. of ZnS particulates. The requirements for such an instrument and its subsequent evolution for both surface and airborne applications are presented. Salient features of real time sampler records from several diffusion tests are discussed. The airborne instrument is shown to provide vertical definition of the tracer distribution which is not otherwise available. Comparisons are made of the time-integrated concns. across the tracer plume, measured by the filter samplers of the Hanford diffusion grid, and the "instantaneous" cross-plume concns. defined by the real time samplers. The instantaneous properties of the continuous plume emphasize the local effects which perturb the mean flow, while the relation of the instantaneous properties to the time-averaged properties provide additional insight into the nature of the instantaneously generated puff. An improved airborne real time sampler, which is nearly ready for testing, was modified to extend its usefulness by redn. of spurious signals. From *Nucl. Sci. Abstr.* 21(22), 41016(1967).

A12432 02045, 02137, 02372, 02401, 02921, 03120, 03320, 03374, 03697, 03873
Esposito, G.G.

QUANTITATIVE DETERMINATION OF PHOTOCHEMICALLY REACTIVE AROMATIC HYDROCARBONS IN ENAMELS AND THINNERS
(APCA)

J. Paint Technol. 40 (520), 214–21 (May 1968).
Recently enacted air pollution abatement laws regulate the amount of photochemically reactive solvents that can be used in paint products. Aromatic solvents possess the strongest solvency of the hydrocarbon types, but their use in paint must now be restricted in order to comply with air contamination laws. This report describes a suitable gas chromatographic procedure for the determination of toluene, ethyl benzene, and total aromatics in enamels and thinners. The solvent is isolated by vacuum distillation. High boiling and low boiling internal standards are added and the analysis is conducted on 6- and 18-ft columns containing N,N-Bis(2-cyanoethyl) formamide as the liquid phase.

A12433 02090, 03120
Ghersin, Z.

DETERMINATION OF ε-CAPROLACTAM IN AIR. (In Rumanian)
(AA)

Revta Chim., 1967, 18 (2), 112–113.
—Pass 20 to 30 litres of air (at 0·3 to 0·5 litre per min.) through two absorber tubes in series each containing 4 ml of water, then transfer the contents of the tubes to two test-tubes, add 1·6 ml of 3M-hydroxylammonium chloride and 0·4 ml of N-NaOH to each, fit each tube with an air-condenser and set aside for 1 hr. in a boiling-water bath. Cool the soln., add 0·2 ml of 2M-HCl and 1·2 ml of 10% $FeCl_3$ soln., mix, and after 10 min. measure the extinction at 500 nm against water. The calibration graph is rectilinear for 4 to 80 mg of ε-caprolactam per cu. metre of air.

A12434 02143, 02521, 02613, 02642, 02681, 02692, 02790, 03880, 05500
Government Chemist

INDUSTRIAL HEALTH AND HAZARDS

London: H.M.S.O., 1968, Ministry of Technology, Laboratory of the Government Chemist Report for 1967, 76–77; SBN 11 470203 9, price £1.2.6. (L)

This section of the report, under the general heading, General chemistry and Forensic Science, relates to work done in the fields of asbestos dust detection, examination of other toxic substances in factory atmospheres, and examination of environmental contamination by factory chimney emissions.

3. Identification and measurement

A12435 02036, 02114, 02372, 02521, 03357, 03500, 05500; 02359; 03373
Government Chemist

PESTICIDES

London: H.M.S.O., 1968, Ministry of Technology, Laboratory of the Government Chemist Report for 1967, 111-120; SBN 11 470203 9, price £ 1.2.6. (L)

In this section of the report, results of a study of levels of pesticides in air and rain at various sites in the U.K. are summarised, under the sub-heading, Pesticides in the atmospheric environment (p. 11-112); and an account is given of work on the application of gas chromatography in the analysis of organophosphorus residues (p. 113-120).

A12436 02114, 02929, 03006, 03006, 03315, 03880; 02964
Government Chemist

TOXIC SUBSTANCES IN INDUSTRIAL ATMOSPHERES

London: H.M.S.O., 1968, Ministry of Technology, Laboratory of the Government Chemist Report for 1967, 140-150, 6 refs.; SBN 11 470203 9, price £1.2.6. (L)

This part of the report deals with work done on methods of determination of hydrogen fluoride, ozone, organic isocyanates, and ketones.

A12437 02030; 02613: 02143, 02512, 02774, 03120
Government Chemist

DETERMINATION OF ASBESTOS IN AIRBORNE DUST

London: H.M.S.O., 1968, Ministry of Technology, Laboratory of the Government Chemist Report for 1967, 175-176; SBN 11 470203 9, price £1.2.6. (L)

Outlines work done on the separation of asbestos from dust samples and on the fractionation of asbestos dusts into types of different densities.

A12438 02030, 02613, 03416, 03881, 03951
Jerman, L. and Jettmar, V.

POLAROGRAPHIC DETERMINATION OF VANADIUM IN THE AIR OF WORKING ENVIRONMENTS. (BESTIMMUNG VON VANADIN IN DER LUFT VON ARBEITSRÄUMEN). (In German)
(APCA)

Z. Ges. Hyg. Ihre Grenzgebiete (Berlin) 14 (1), 12-14 (Jan. 1968).

A polarographic method for the determination of traces of vanadium in floating dust is described. The dust is collected on membrane ultra-filters (pore width 0.6-0.9 μm). Following mineralization of the sample in 45% nitric acid, the polarographic stages of vanadium are recorded using a conductive solution of borax, ammonia, and chelaton III. The sensitivity of this method is 1.5 μg V_2O_5/ml.

A12439 02036, 02521, 03373, 03881
Kobayashi, Y. and Meguro, T.

A RAPID METHOD FOR MICRODETERMINATION OF PHOSPHINE IN AIR BY MEANS OF DETECTOR TUBES. (In Japanese)
(CA)

Bunseki Kagaku 16(12), 1359-64(1967). A rapid and simple method for the detn. of small amts. of PH_3 in air by detector tubes was investigated. For the rapid detn., several detector reagents showing discoloration when exposed to air contg. small amts. of PH_3 were studied, among which silica gel impregnated with Au chloride was the most suitable. The concn. of PH_3 was estd. by measuring the length of discolored zone after drawing definitive vols. of air sample (10 ml., 500 ml., and 5 l.) through the tube with a const. flow rate (1 ml./sec.). The measurable concn. range by this method was 0.03-150 ppm. PH_3. The relative error was within ±5%. Effects of water content of the detector reagent, the vol. of sample, temp. of the detector tube, feeding time, etc., and effects of the other gases were tested. The method gave results generally agreeable with colorimetric anal. and was recommended as a field method.

3. Identification and measurement

A12440 02114; 02008, 02157, 02921, 03120; 03333
Kocian, V.
ANALYZER FOR HYDROCARBONS, ESPECIALLY ACETYLENE, IN OXYGEN OR AIR (Patent)
(CA)
Czech. 124,111 (Cl. G 01n), Aug. 15, 1967, Appl. Oct. 9, 1965; 4 pp. The automatic analyzer for detn. of C_2H_2 in liq. or gaseous air or O, suitable for O and N production, and for detn. of explosive concns. of gases in C_2H_2 plants is based on passing a known amt. of gas through synthetic cryst. aluminosilicates (I) in one cycle and release of absorbed hydrocarbons by heating I in a N stream in the other cycle. The flow of the analyzed gas and N and heating of I are controlled by a system of solenoid valves, throttles, and time and programming relays. The desorbed hydrocarbons are detd. in the usual way. One system can analyze as many as 10 samples simultaneously.

A12441 02114, 02214, 02548, 02804
Kolthoff, I.M. and Elving, P.L. (editors)
GAS ANALYSIS
Treatise on Analytical Chemistry, part I, vol. 8, Interscience Publishers, New York, 1968; p. 5281-2. (L)

This chapter of the book provides a brief survey of recent work on the application of differential thermal analysis in the analysis of gases.

A12442 02094, 02416; 02036, 02372, 02683, 03120, 03251
Leithe, W. and Hofer, A.
DETERMINATION AND OCCURRENCE OF LOW CONCENTRATIONS OF NITROUS OXIDE IN FLUE GASES, AIR, AND WATER. (In German)
(CA)
Allg. Prakt. Chem. 19(3), 78-9(1968)
Low N_2O concns. were detd. by gas–liq. chromatog. (G.L.C.) on a 19% propylene carbonate-16.5% glutaronitrile/Sterchamol column at 20°, by using He carrier gas and a hot-wire detector; 50 ppm. N_2O in a 10-ml. gas sample can be detected. The G.L.C. method can be used to det. N_2O in the exhaust gas from the NH_3 combustion during the production of HNO_3, as well as in air and water samples. The air peak appeared in 7 min., the N_2O peak in 14 min., and the CO_2 peak in 15 min. Air samples (10 l.) were enriched by adsorption on an activated silica gel column at −70 to −75°. The concd. sample was desorbed by warming the column to room temp. and flushing with He, then analyzed by G.L.C. Replicate (6) detns. of atm. samples gave 0.23 ± 0.03 ppm. N_2O, compared to the 0.28 ± 0.04 ppm. value reported by J. E. Birkeland and J. H. Shaw (1959). The liq. intermediate and final products of HNO_3 prepns. were analyzed for N_2O by boiling off the dissolved gases, which were then distd. over KOH soln. with CO_2 in an azotometer. Then
(contd)

A12442 (contd)
the gases were enriched on the silica gel column and analyzed by G.L.C. To det. N_2O dissolved in water samples, the app. was flushed 1st with CO_2. The 5-l. water samples were added to a dropping funnel to a flask and heated, during the sample addn., to gentle boiling while flushing with CO_2. Then the gases were conducted through the azotometer, enriched, and analyzed.

3. Identification and measurement

A12443 02150, 02427, 02552, 03192, 03492, 03882
Ludwick, J.D., et al.
AUTOMATIC REAL TIME AIR MONITORING OF ^{85}Kr UTILIZING THE 4096 MEMORY OF A MULTIPARAMETER ANALYZER
(APCA)

Rev. Sci. Instr. 39 (6), 853-9 (June 1968).
A noble gas atmospheric monitoring field grid system in which ^{85}Kr is used as a tracer has been designed, constructed and implemented for studying atmospheric transport and diffusion. This system has demonstrated its usefulness in the quantitative measurement of the transport and diffusion of both continuous and true puff-type radioactive gas releases on a real-time basis. Small fluctuations in the air concentrations of the tracer are determined by using integrating times of as little as 1 sec. The system consists of a large group of field detectors which relay their information to a 4096 address memory. The memory is presently programmed to accept information from 64 detectors. Information is accumulated in groups of 64 time channels and these groups are automatically stepped by the programmer. A time interval selector allows automatic advance of the stepping process at a slow or fast rate allowing the desired differential data accumulation. The memory is read out on magnetic tape and the equipment is ready for the next field test 35 sec after completion of a tracer field test.

A12444 02114, 02416, 02804; 02681; 03333
Mobil Oil Corp. and Harvey, R.B.
COMBUSTION GAS ANALYZER CONDENSER. (Patent)
(CA)

U.S. 3,368,386 (Cl. 73-27), Feb. 13, 1968, Appl. April 6, 1964; 4 pp. Samples for anal. of hot furnace combustion gases can be dried and cleaned of interfering C and ash particles by suctioning off the gas sample, washing it through a water column, and then drying it through a water-cooled condenser. Reliable anal. by means of thermal cond. methods can now be achieved because of the removal of the interfering water and solid particles.

A12445 02306, 02521, 02804, 03955
Nelson, G.O. and Griggs, K.S.
PRECISION DYNAMIC METHOD FOR PRODUCING KNOWN CONCENTRATIONS OF GAS AND SOLVENT VAPOUR IN AIR
(AECA)

Rev. Sci. Instr. 39 (6), 927-8 (June 1968).
An apparatus was designed to generate known concentrations of vapor and gas over a wide concentration range for calibration of instruments for detecting gases and vapors. The calibration apparatus consists of an air cleaner, a solvent injection system, and a combination mixing and cooling chamber. Ease of use and wide ranges of applicability makes this a highly useful apparatus for calibration work.

A12446 02001, 02372, 02520, 02560, 02670, 03153, 03268, 03576
Okita, T.
COLLECTION AND ANALYSIS OF ODOROUS GASES. I. COLLECTION OF ORGANIC SULPHUR COMPOUNDS BY MEANS OF ORGANIC SOLVENTS AND MERCURIC CYANIDE, AND THEIR GAS CHROMATOGRAPHIC ANALYSIS. (In Japanese)
(CA)

Koshu Eiseiin Kenkyu Hokoku 16(2), 59-63 (1967). MeSH, EtSH, or Me_2S in air above 0.15 ppm. was nearly quant. absorbed in dry ice-acetone, MeOH, EtOH, or PhOEt when passed at a flow rate of 1 l./min. A 5% $Hg(CN)_2$ soln., glass fiber filter impregnated with $Hg(CN)_2$, or active C column was an effective adsorbent for MeSH, EtSH, and Me_2S as well as those org. solvents, but desorption of MeSH, EtSH, and Me_2S from active C was hard to achieve. The Hg salts of MeSH, EtSH, or Me_2S were then hydrolyzed by HCl, and collected in chilled acetone. The sample in the org. solvent was concd., and subjected to gas chromatog. on a tricresyl phosphate-Celite (30:70) column (4 m.) at 40° by using N at 20 ml./min. The retention time of MeSH, EtSH, and Me_2S was 8, 11.5, and 13.5 min., resp. The limit of detection of MeSH, EtSH, and Me_2S was 0.24, 0.035 and 0.071 μg., resp.

3. Identification and measurement

02036, 02372, 02521, 03120, 03576, 03829

A12447 Perin, G.

THE GAS CHROMATOGRAPHIC DETERMINATION OF TETRAETHYL LEAD IN THE ATMOSPHERE (In Italian)

(APCA)

Med. Lavoro (Milan) 58 (10), 624–31 (Oct. 1967).

A gas chromatographic apparatus for the detection and quantitative analysis of tetraethyl lead in air samples is described. Using known samples of tetraethyl lead (3–400 $\mu g/m^3$), recovery was excellent and ranged from 93 to 99%. Techniques of air sampling and analysis, according to the sample concentration, are described. This gas chromatographic method is fast, precise, and thought to be of value for routine determinations.

02415, 02521, 03192, 03241, 03333

A12448 Precision Scientific Co. and Lyshkow, N.A.

COLORIMETRIC ANALYSIS OF NITROGEN DIOXIDE IN AIR (Patent)

(CA)

U.S. 3,375,-079 (Cl. 23–232), March 26, 1968, Appl. June 8, 1965; 6 pp. NO_2 can be detected in air by the use of a Greiss-type colorimetric reagent which has the advantage of rapid color development and sensitivity to any given NO_2 level. The optimum formulation for the colorimetric reagent is: 0.050 g. *N*-1-naphthylethylenediamine-2HCl; 0.050 g. 2-naphthol-3,6 disulfonic acid di-Na salt; 1.500 g. sulfanilamide; 15.0 g. tartaric acid; deionized H_2O to make 1 l. of soln. This reagent develops 96% of its final color intensity in 1 min., and, when used in high speed continuous atm. monitoring instruments, is capable of resolving short duration NO_2 pulses as low as 0.05 to 0.10 ppm.

02036, 02464, 02995, 03428, 03512

A12449 Reinet, J., Tammet, H. and Salm, J.

ON THE METHODS OF COUNTING AIR IONS

Biometeorology, vol. 2, part 2, p. 1037-1046, 39 refs., (Proceedings of the Third International Biometeorological Congress, 1-7 Sept. 1963), Pergamon Press, Oxford (etc.), 1967

It is expedient to earth the outer cover of an air ion counter. In this case the neutral terminal of a sensitive electrometer gets a voltage. If the neutral terminal is earthed, the electrometer should be connected with the inner cover by a coupling capacitor. The disturbing influence of voltage fluctuations is removed by a balanced bridge scheme. The most essential parts of the structure of a counter are its insulators, which must be protected from the direct action of outside air and the precipitation of aerosol particles. The parts surrounding the insulators must have a voltage equivalent to that of the inner cover. An attempt has been made to meet these requirements in constructing a portable ion counter fed by alternating current. Changes in ion density can be automatically registered by means of a recording external millivoltmeter connected with the counter.

02040, 02217, 02977, 03120

A12450 Rivalier, A.

MEASURING APPARATUS AND CAPABILITY FOR CARRYING OUT BIOCLIMATOLOGICAL STUDIES, (APPAREILS DES MESURES ET POSSIBILITES D'INVESTIGATIONS BIOCLIMATOLOGIQUES).

(In French; English summary)

Biometeorology, vol. 2, part 2, p. 805-813, (Proceedings of the Third International Biometeorological Congress, 1-7 Sept. 1963), Pergamon Press, Oxford (etc.), 1967

The study of the correlations between meteorological and physiological-pathological phenomena is extremely complicated because of the difficulty of obtaining comparable parameters and the complexity of the apparatus used. Bioclimatological investigations make it possible to analyse the common meteorological factors, radiation, atmospheric electricity, radioactivity, air pollution, and to study microclimate. A synopsis of the major meteorological and seasonal events should also be made. Experimental investigations can be of different types, e.g. physiological, pathological, or based on dynamics and statistics of certain physiopathological phenomena. The polar environment is suitable for all types of biometeorological investigations.

A12451 02681, 03243, 03251
Shaw, J.T.
INSTRUMENTAL METHODS FOR THE DETECTION OF HIGHER OXIDES OF NITROGEN IN NITROUS OXIDE
(Smokeless Air, Summer 1968, vol. 38, (146), 286).

Brit.J. Anaesth., 1968, 40, 299-303. This paper discusses the possible application of instrumental methods used by the British Coal Utilization Research Association for flue gas analysis to detect the contamination, by higher oxides of nitrogen, of nitrous oxide (N_2O) intended for use as an anaesthetic. Two galvanic instruments sensitive to 1 ppm v/v of nitrogen dioxide (NO_2)—or, when supplemented by a pre-oxidizer, of nitric oxide and nitrogen dioxide ($NO + NO_2$)—are described; either might be adapted to actuate an alarm. The methods are discussed in the light of governmental standards of air quality.

A12452 02114, 03243, 03576, 03779, 03780
Smith, J.F., Hultz, J.A. and Orning, A.A.
SAMPLING AND ANALYSIS OF FLUE GAS FOR OXIDES OF SULPHUR AND NITROGEN
(APCA)

Dept. of the Interior, Bureau of Mines, RI 7108. 21 pp. (Apr. 1968).
A series of studies of emissions from large coal-fired steam generators have included measurements of the concentrations of oxides of sulfur and oxides of nitrogen. The sampling equipment, method of sampling, and analytical techniques used for processing of these samples are detailed. A method based on the precipitation of benzidine sulfate was developed for determining both SO_3 and total oxides of sulfur in the presence of interfering acidic components in the stack gases. In addition, difficulties encountered with sampling and analytical techniques are also described.

A12453 02030, 02625, 02722, 03331, 03427, 03576, 03881
Spurny, K.
ON THE USE OF MICROPOROUS FILMS FOR COLLECTING VERY FINELY DISPERSED AEROSOL SAMPLES. (REMARQUES SUR L'EMPLOI DES MEMBRANES À MICROPORES POUR LE CAPTAGE D'ÉCHANTILLONS D'AÉROSOLS À DISPERSIONS TRÈS FINE). (In French; English summary)
Biometeorology, vol. 2, part 2, p. 1099-1104, 9 refs., (Proceedings of the Third International Biometeorological Congress, 1-7 Sept. 1963), Pergamon Press, Oxford (etc.), 1967

The efficiency of a relatively thin micro-pore filter of mean pore diameter $2\bar{R} = 1.8\mu$, for the sampling of a dispersion of very small aerosol particles (mean dimensions $2\bar{r} = 0.05\mu$ to 0.20μ) has been measured. The results show that when $\bar{r} \ll \bar{R}$ filtration with a micro-pore filter takes place somewhat as with a fibre filter. Accordingly for sampling dispersed aerosols of small or very small particles, a rather thicker micro-pore filter and a reduced speed of flow are preferred.

A12454 02614, 02625, 02722, 03826
Strauss, H.-J.
COMMENTS ON THE CURRENT SITUATION IN THE FIELD OF AIR-FILTER TESTING. (BEMERKUNG ZUR GEGENWÄRTIGEN SITUATION AUF DEM GEBIET DER LUFTFILTER-PRÜFUNGEN). (In German; English summary)
Staub, Oct. 1968, vol. 28, 391-395, 2 refs. (L)

Current methods for air-filter testing are briefly surveyed. In order to assess a filter medium and solve problems of economy associated with the use of an air filter, the following three kinds of information should be furnished by the test methods and be considered jointly: (1) resistance of the clean filter medium; (2) dust removal capacity (efficiency) of the filter; (3) changes in filter resistance due to dust accumulation.

3. Identification and measurement

A12455 02683, 02934, 03120 03124, 03324, 03512, 03771, 03777, 03869

Thoen, O.N., DeHaas, G.G. and Austin, R.R.

INSTUMENTATION FOR QUANTITATIVE MEASUREMENT OF SULPHUR COMPOUNDS IN KRAFT GASES

(APCA)

Tappi 51 (6), 246-9 (June 1968).

A recording electrolytic titrator has been evaluated in quantitative measurement of sulfur dioxide, hydrogen sulfide, mercaptan, organic sulfide, and residual sulfur concentrations. The equipment, after slight modification, allowed rapid and reliable analysis of ambient air as well as samples drawn from kraft recovery furnace ducts, oxidation tower vents, and lime kiln stacks. Samples with concentrations ranging from 10 ppb to 800 ppm of hydrogen sulfide can be analyzed by selection of the proper range setting. Analysis requires 7-10 min per sample and can be conducted in the laboratory or at the point of sample collection since the instrument is portable.

A12456 02359, 02441, 02630, 03120

Waclawik, J. and Waszak, F.

GALVANIC APPARATUS FOR THE STUDY OF GASES. II. CONTINUOUS DETERMINATION OF SMALL AMOUNTS OF CHLORINE IN GASES

(CA)

Chem. Anal. (Warsaw) 12(4), 877-83(1967).

The cell consists of Au and Ag electrodes; the electroiyte is a KCl soln. acidified with HCl and circulating in a closed system. Cl is absorbed in the electrolyte and reduced on the Au electrode whereas the Ag electrode is oxidized to AgCl. The elec. curent, proportional to the Cl concn., is measured by a recording potentiometer. As little as 1.5 ppm. of Cl can be detd. with an accuracy of 0.02 ppm. in N, H, CO_2, air, and noble gases.

A12457 03120, 03881, 04027

West, P.W. and Thabet, S.K.

MICRODETERMINATION OF ZINC BY MEANS OF REAGENT CRAYONS AND THE RING-OVEN TECHNIQUE

(AA)

Analytica chim. Acta, 1967, 37 (2), 246-252.— The sensitive (0·04 μg of Zn can be detected) and specific procedure described permits determination of 0·1 to 1 μg of Zn, *e.g.*, as dust in air. The reagent *o*-(2-thenylideneamino)benzenethiol (I), is used either as a soln. in $CHCl_3$ or as a wax crayon and forms a deep-red complex with Zn^{2+}. Interfering or coloured cations are masked with KCN, and subsequent de-masking of Zn and Cd is effected by the addition of chloral hydrate. The mixture is washed to the ring-zone with aq. NH_3, and the colour of the rings of the Zn - I complex is developed with 0·2% NaOH soln. Anions do not interfere. The choice of filter-paper, the operational precautions, and the slight modification necessary when Cd^{2+} are present are described.

See also: A 12406, A 12411, A 12412, A 12471, A 12490, A 12492, A 12498, A 12502, A 12509, A 12527

4. Distribution (surveys, chimney heights, meteorology)

A12458 02030, 02150, 02419, 02739, 03135, 03315, 03752, 03799, 03990, 05880

American Meteorological Society

PROGRAM OF THE CONFERENCE ON COMPOSITION AND DYNAMICS OF THE UPPER ATMOSPHERE, November 6-8, 1968, El Paso, Texas

Bull. Am. Met. Soc., Aug. 1968, vol. 49, 837-850. (L)

Gives a synopsis of the conference, with abstracts of papers read at the sessions. The titles of the sessions were, Water vapour; Meteor trail radar; Particulates; Ozone; Atmospheric wave motions; Stratospheric circulation; and Mesopheric structure.

A12459 00046, 02681, 03658, 03777; 02043, 02461, 02790, 02795, 03739; 05643

Anon.

NATIONAL SOCIETY FOR CLEAN AIR: SHEFFIELD AND DISTRICT COMMITTEE REPORT

Smokeless Air, Summer 1968, vol. 38, (146), 249. (L)

The 1967 report of the statutory committee shows a further improvement in the quality of the air of the city and its environs. The average pollution by smoke (in microgrammes per cubic metre) has decreased steadily from 326 in 1956 to 94·4 in 1967. For sulphur dioxide there has been a similar, though not so marked, fall; from 285 in 1956 to 147 in 1967.

Nearly 12,000 chimney observations were made, showing an average smoke emission per half hour of 0·21 minutes. 19 abatement notices were served and there were seven prosecutions.

The report says that one of the most significant signs of progress int he industrial sector has been the acceptance by the steel industry that the vast volumes of "brown fume" given off from their furnaces when using oxygen had to be controlled.

A12460 02040, 02320, 02642, 02914, 02915, 02988, 03135, 03201, 03312, 03374, 03654, 03692, 03800, 03876, 03959, 04009; 02392, 02394, 02400; 02830, 03818; 05810, 05814, 05816

Bell, G.G.

METEOROLOGICAL EFFECTS ON CALIFORNIA AIR POLLUTION

Biometeorology, vol. 2, part 2, p. 628-640, 13 refs., (Proceedings of the Third International Biometeorological Congress, 1-7 Sept. 1963), Pergamon Press, Oxford (etc.), 1967

Urban pollution experience in California arises from synergistic interaction of contaminants from a petroleum economy and certain features of a maritime coastal climate. The meteorologic effects of persistent inversions and a fugitive sea breeze coupled with pollution from extensive usage of motor vehicles produce episodic physiological strain on the urban population. Temporal changes in the available atmospheric mixing volume in concert with strong topographic influences and contrasting temperature effects on natural ventilation produce a variety of influences on primary and secondary pollution. Reactions, physical properties, and emissions of atmospheric contaminants undergo substantial changes depending on the state of the atmospheric environment. Humidity, solar energy, horizontal ventilation, inversion height and cloud cover play important parts in these respects.

A12461 02030, 02124, 02125, 02200, 02204, 02205, 02378, 02386, 02456, 02748, 02881, 03356, 03363, 03479, 03959, 05240

Bosco, G., Barsini, G. and Grella, A.

NEW STUDIES ON THE PRESENCE OF AROMATIC POLYCYCLIC HYDROCARBONS IN THE ATMOSPHERIC DUSTS OF THE HISTORIC CENTRE OF THE CITY OF SIENA. (In Italian) (APCA)

Nuovi Ann. Igiene Microbiol. (Rome) **18** (4), 285-92 (July-Aug. 1967).

Air at three locations in the center of town was sampled daily from Sept. 1965 to June 1966 using a high volume sampler. Particulate residues deposited on the filter paper were then analyzed for the presence of aromatic hydrocarbons. Data are tabulated and are considered of interest due to the closing of this part of town to all private traffic. Phenanthrene, anthracene, pyrene, methylpyrene, fluoranthene, 1,2-benzanthracene, chrysene, perylene, benzopyrenes, benzofluoranthenes, anthanthrene, 1,12-benzoperylene, 1,2,5,6-dibenzanthracene, and coronene are found in amounts ranging from traces to 10.45 μg/100 m. Highest values are generally observed during December and January. Domestic heating is mentioned as a source of the hydrocarbons.

4. Distribution (surveys, chimney heights, meteorology)

A12462 02392, 03799, 03818, 03959, 04009, 05610
Chandler, T.J.
LONDON'S HEAT ISLAND
Biometeorology, vol. 2, part 2, p. 589-597, 18 refs., (Proceedings of the Third International Biometeorological Congress, 1-7 Sept. 1963), Pergamon Press, Oxford (etc.), 1967.

The London Climatological Survey has been established to investigate the degree to which London's climate is the product of its urban morphology. Temperature differences between central districts and rural areas outside the city are greatest by night, and in summer and early autumn, but the intensity and form of the warm air above London on any particular day or night depends upon atmospheric conditions, particularly of wind speed and direction, and cloud amounts. The form of the warm air, or heat-island, is closely controlled by the character of the urban development, especially the density and bulk of the buildings, and the size and distribution of open spaces within the built up area.

A12463 02049, 02494, 02912, 02915, 03658, 03777, 03818, 03876, 04009; 02150, 03726; 05643
Garnett, A.
THE SURVEY OF AIR POLLUTION IN AN INDUSTRIAL CITY: SHEFFIELD
Biometeorology, vol. 2, part 2, p. 641-647, 1 ref., (Proceedings of the Third International Biometeorological Congress, 1-7 Sept. 1963), Pergamon Press, Oxford (etc.), 1967

Some preliminary cartographic results of air pollution survey in Sheffield under anticyclonic conditions, are considered in relation to peculiarities of site and urban functional patterns, and with reference to both hourly and daily records of changes.

A12464 03777, 04011, 05180
Gräfe, K.
INFLUENCE OF WIND DIRECTION ON SO_2 CONCENTRATION IN HAMBURG (In German)
(Smokeless Air, Summer 1968, vol. 38, (146), 285).

Archiv für Hygiene und Bakteriologie, 151, No. 8. 1967. The records taken by 27 measuring points in the course of nine years have been entered into a map as SO_2 wind-roses. The author explains that those sources of the emissions can be determined by means of this method, which are essentially increasing the basic load. Besides the use of the immission characteristics, such plottings are deemed useful for detailed air-hygienic advice.

A12465 02043, 02425, 02427, 02578, 02640, 02642, 04009
Hasek, M.
SOME GENERAL PROBLEMS IN AIR POLLUTION AND THEIR BASIC SOLUTION. (In Czech)
(APCA) *Cesk. Hyg.*
(Prague) 11 (9), 544-8 (1966).

The conditions for dispersion of industrial pollutants are discussed and a simple mathematical model is formulated in terms of area affected, pollutant concentration, wind velocity, and emission rate. A half life is defined which designates the period of time in which half of the pollutants disappear from the atmosphere. Also, minimum rarefaction is defined as follows:

$$D\text{min, crit} = \frac{Q}{\chi\text{crit}} = 2e\pi BHA^{-1}$$

where B is a factor characterising the emission source on the basis of the emission velocity, heating value of the fuel, etc.; H is stack height; and A is the measure of anisotropy of turbulence (the ratio of the Sutton parameters). To secure optimum dispersion, B and H must be maximized (by selection of appropriate technical conditions) and A must be minimized (by selection of favorable meteorological and topological conditions). If Dmin, crit cannot be increased by an available means, then the air cannot be kept clean by dispersion. In this case, emission must be reduced or the point sources must be distributed over a larger area.

4. Distribution (surveys, chimney heights, meteorology)

A12466 02030, 02150, 02586, 02739, 03184, 03833, 03922

Kao, S.-K.

RELATIVE DISPERSION OF PARTICLES IN A STRATIFIED ROTATING ATMOSPHERE

(APCA)

J. Atmospheric Sci. 25 (3), 481-7 (May 1968).

An analysis of the kinetics and dynamics of the relative dispersion of particles in a stratified rotating fluid is made. The expressions for the relative displacement tensor, and the power- and cross-spectra of the relative velocity are derived. Their characteristics for large and small diffusion times are examined. The governing equations for the motion of marked fluid particles are separated into two sets of equations, one governing the motion of the center of mass and the other governing the motion of individual particles relative to the center of mass. Discussions of the concentration distribution in clusters of marked fluid particles are made. A turbulent diffusion model is constructed for the estimate of the effects of thermal stratification and rotation on the dispersion of particles in the atmosphere.

A12467 02049, 02386, 03658, 03700, 05340

Kemeny, E. and Halliday, E.C.

SMOKE CONCENTRATIONS IN SOUTH AFRICAN TOWNS, Part III, DATA FOR OCTOBER 1964 TO SEPTEMBER 1966

(APCA)

Air Pollution Res. Group. S. African CSIR, P.O. Box 395, Pretoria, S. Africa.

Smoke and soot are the most common pollutants in the city air. The major cities in South Africa started to measure smoke many years ago. The Air Pollution Research Group of CSIR has also undertaken short term studies in ten smaller towns. In this report smoke data for Oct. 1964 to Sept. 1966 for five cities and ten towns are presented.

A12468 02043, 02318, 02449, 02613, 02770, 03046, 03243, 03331, 03627, 03680, 03777, 03780, 03818, 03959; 02386, 05069

Kurchatova, G., Bluskova, D. and Argirova, M.

AIR POLLUTION IN SOFIA, (In Bulgarian)

(CA)

Khig. Zdraveopazvane 10(5), 449-56(1967). The results presented were obtained from 7 selected areas of Sofia through 1963-6. The following air polluting substances were detd.: SO_2, H_2SO_4, dust, soot, Cu, Pb, SiO_2, CO_2, HCHO, and N oxides. The mean annual concn. of SO_2 was 0.40 mg./m.^{3} During the winter months, levels as high as 2.5 mg./m.^{3} were measured. The dependence of the concn. of SO_2 on the air temp. changes was also studied. The max. concn. of H_2SO_4 was 0.47 mg./m.^{3} The range of the amt. of sedimented dust was 143-814 tons/km.^{2} Mean Cu and Pb concns. in the sedimented dust were 18.9-33.5 and 33.8-68.3 mg./100 g. of dust, resp. Dust particle size distribution was as follows: <1 μ 45-65, 1-5 μ 23-33, 5-10 μ 12-22, >10 μ 0-2%. The mean concn. of free SiO_2 in dust was 24-27.2%. The mean concn. of soot was 0.05 mg./m.^{3} The max. concns. of CO_2, HCHO, and N oxides were 33, 0.12, 0.33 mg./ 2,4-D, 2,4,5-T, and PCPA because of their difference in Cl content and in sensitivity towards the electron-capture detector.

A12469 02030, 02386, 02392, 02914, 02964, 02988, 03089, 03135, 03312, 03331, 03444, 03692, 04009, 05800

Landsberg, H.E.

AIR POLLUTION AND URBAN CLIMATE

Biometeorology, vol. 2, part 2, p. 648-656, 19 refs., (Proceedings of the Third International Biometeorological Congress, 1-7 Sept. 1963), Pergamon Press, Oxford (etc.), 1967

Air pollutants, which have become a major health menace, show essentially similar behavior under the influence of meteorological factors, regardless of type and origin. In American metropolitan areas pollution concentrations are, by and large, a function of population density. As a dispersant the wind is the factor of primary importance; precipitation is next in effectiveness. In dry weather with low wind speeds intensity of solar radiation governs the production of irritating oxidants. Persistent stagnation conditions with low-level inversions will create in some industrial regions hazardous levels of pollution with increasing frequency. Adequate warnings can be issued but if proper control measures of the sources are neglected, the outlook for the industrial areas of the world is pessimistic.

4. Distribution (surveys, chimney heights, meteorology)

A12470 02043, 02048, 02150, 02552, 02768, 03135, 05800
Ludwig, J.H. and McCormick, R.A.
THE METEOROLOGY PROGRAM OF THE NATIONAL CENTER FOR AIR POLLUTION CONTROL
Bull. Am. Met. Soc., Aug. 1968, vol. 49, 823-829, 15 refs. (L)

Since the inception of the U.S. Federal air pollution programme by the passage of an Act (P.L. 159) in 1955, meteorology has been an integral part of that programme. The contribution made by the meteorologist in these activities is reviewed, attention being paid in particular to research activities (forecasting of air pollution potential, and study of diffusion of air pollutants), and services to N.C.A.P.C. programmes.

A12471 02030, 02642, 03120, 03135, 03331, 03408, 03576, 03691, 03976
Meland, B.R.
A COMPARATIVE STUDY OF PARTICULATE LOADINGS IN PLUMES USING MULTIPLE SAMPLING DEVICES
J. Air Pollut. Control Ass., Aug. 1968, vol. 18, 529-533, 10 refs. (L)

The method of particulate sampling in plume of emission sources under suitable fumigating meterological conditions has provided a simple and rapid estimation of particle size distributions, identification, and concentrations. The particle characterization information can be used to determine visibility reduction through diffusion and transmittance calculations.
Membrane filter or cascade impactor samples yield similar results for particulate size distributions in plumes. If unusually high loadings exist in the plume, short sampling times and separational methods of sampling such as the cascade impactor, are recommended.
Because of its over-all high efficiency, the membrane filter is the method of choice for determining particle concentrations.
The rotorod sampler is more capable of picking up the large particles, such as the large stringy glass fiber particles, compared to the cascade impactor or membrane filter. To get

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A12471 (contd)

sizes and identity of larger particles, the rotorod sampler is recommended. Estimation of larger particle concentrations in plumes is useful for emission inventory and contamination information in the immediate areas of the emission source.

The three methods of sampling used in this study are applicable for plume sampling. It is hoped that additional particulate studies will be conducted with other instrumentation and techniques to further methodology in small particulate sampling applicable to either ambient or plume environments.

A12472 02049, 02121, 02386, 02399, 02615, 03777, 04009, 05310
Paluch, J.
AIR POLLUTION IN KATOWICE PROVINCE. (In Polish)
(APCA)
Gaz Woda Tech. Sanit. (Warsaw) 38 (1), 17-20 (1967).

About 25 of the 83 million tons of coal consumed in Poland in 1961 were consumed in Katowice province, an area of 9500 km². Thus, the theoretical annual dust fall in Katowice province should be 144 ton/km², compared with 17.5 ton/km² for all of Poland. SO_2 is also a problem, particularly since Polish coals contain an average of 1% sulfur. The average SO_2 air pollution in Katowice province was almost 1.5 mg/m³ with no wind and 1 mg/m³ with 2.8 m/sec winds. In reality, SO_2 air pollution is higher since coal with higher sulfur content is presently being used; there are also many other sources of atmospheric SO_2. The coal dust fall and SO_2 measurements thus tend to indicate that pollution levels are far higher than the quoted averages. For example, three cities in the province, with their annual dust fall and SO_2 air pollution, respectively, are: Chorzów (1955–1962), having 12–32,000 ton/km² and 0.20–5.45 mg/m³; Ruda Slaska (1959–1962), 125–26,200 ton/km², no data available for SO_2 pollution; and Gliwice (1955–1962), 73–23,700 ton/km² and 0.27–11.58 mg/Nm³. Of several cities (contd)

A12472 (contd)

discussed, lowest air pollution figures were reported from Bedzin: (1955–1962), 76–3,030 ton/km² and 0.13 mg/m³. Air pollution in Katowice province is thus considered to be alarming, especially in view of the established permissible pollution limits of 300 ton/km² for annual coal dust fall and 0.3 mg/m³ for SO_2 levels.

4. Distribution (surveys, chimney heights, meteorology)

A12473 02271, 02386, 02392, 03535, 03558, 03818, 05553

Parry, M.

THE URBAN "HEAT-ISLAND"

Biometeorology, vol. 2, part 2, p. 616-624, 12 refs., (Proceedings of the Third International Biometeorological Congress, 1-7 Sept. 1963), Pergamon Press, Oxford (etc.), 1967

The results of a survey of local climate in Reading, England, are used to assess the causes of the varying strength of the urban warmth ("heat island") in different parts of the town. It is concluded that, for a town of this type, the density of the built-up area is the dominant influence, being more important than the smoke content of the air or the artificial warmth of buildings. The conditions of exposure at fixed recording stations are shown to be highly significant and the dangers of unrepresentative siting are stressed. A plea is made for the recognition of the essentially microclimatic character of the so-called "urban climate".

A12474 02040, 02094, 02297, 02359, 02386, 02416, 02427, 03361, 03444, 03500

Ubl, Z.

CHEMICAL COMPOSITION OF ATMOSPHERIC PRECIPITATION AND AIR PURITY. (In Czech) (APCA)

Cesk. Hyg. (Prague) 11 (9), 535-61 (1966).

The washout of air pollutants by precipitation is an important means of air purification. Relationships between location, air pollution, amount of precipitation, and concentration in rain water are therefore important for studying the purification of the atmosphere. The concentrations of sulfates, calcium, chlorides, and ammonia, as well as pH, were determined in rain water from Sedlec u Zeliva (clean air), and also from Albrechtice, Komorany, and Prague (polluted air). The incidence of given pollutants was then tabulated for the four cities. The limiting value for sulfates in a nonpolluted area, defined as 30 mg/l, was exceeded in 40% of the measurements in Prague. The limiting value of 5 mg/l for calcium was exceeded in 60% of the measurements in Prague and Komorany. The limiting value of 2.5 mg/l for ammonium was exceeded in 75% of the measurements in Komorany due to pollution from combustion products. This shows that the concentration of pollutants in rain water above given limits is indicative of the degree of air pollution.

A12475 02030, 02150, 02394, 02425, 02426, 02552, 02969, 03976

Wallington, C.E.

NUMERICAL SOLUTION OF ATMOSPHERIC DIFFUSION EQUATIONS

London: H.M.S.O., 1968, Meteorological Office Scientific Paper No. 28, Met.O.806, 38 pp., 4 refs.; price 6s6d. (P 12250)

Techniques of solving atmospheric diffusion equations analytically with the aid of Laplace transforms and numerically with the aid of a high-speed computer are discussed. Applications to a visibility problem (associated with aircraft approach to runways in smoke haze) and clouds of falling particles are given.

A12476 02040, 02214, 02318, 02392, 02578, 02768, 02914, 03135, 03184, 03408, 03727, 03728, 03777, 03876

Wanta, R.C.

METEOROLOGY AND INDUSTRIAL HYGIENE

Industrial Hygiene Highlights, vol. 1, published by Industrial Hygiene Foundation of America, Inc., Pittsburgh, 1968, p. 297-318, 247 refs. (L)

This chapter of the book covers the topics, Dispersion of air contaminants from multiple and single sources, Local meteorology, Air pollution potential from meteorological considerations, Biometeorology, Climatology,

4. Distribution (surveys, chimney heights, meteorology)

A 12477 02036, 02615, 02964, 03195, 03535, 03569, 05930

Wentzler, M.L.

AIR POLLUTANTS IN LYCOMING COUNTY. A CURSORY STUDY OF SOLID POLLUTANTS (APCA)

Lycoming

Wld. 57 (1), 217–18 (Apr. 1968).

Three stations were selected in order to determine monthly dust fall around a farm, a small settlement, and a dust-producing industry. Data collected from April 1967 through Oct. 1967 are tabulated. Dust fall at the farm site ranged from 0.5 to 4.0 ton/m²/month, while at the settlement it ranged from 0.5 to 4.0, and in the industrial area it ranged from 3.0 to 6.3. Thus, East Lycoming County is considered to have consistently "clean" air at all three sites.

A 12478 02061, 02139, 02229, 02263, 02320, 02374, 02386, 02613, 02690, 02770, 02914, 02934, 02997, 03046, 03104, 03133, 03177, 03243, 03555, 03627, 03700, 03780, 05068

Yanev, B. et al.

AIR POLLUTION IN PERNIK AND ITS EFFECT ON THE POPULATION. (In Bulgarian) (CA)

Khig. Zdravopazvane 10(5), 457–71(1967) Air pollution in Pernik, a Bulgarian town with metal and mining industries, and health effects on its inhabitants were investigated and the results were compared with the control non-industrial town Breznik through 1966. The results presented are based on representative group of 2812 people selected from 75,824 inhabitants of Pernik. Anthropological, medical, and biochem. investigations were carried out, the latter also in rabbits. The levels of the following air pollutants were measured in 5 areas of the town: dust, soot, SiO_2, H_2SO_4, H_2S, CO, nitrogen oxides, aldehydes, HCHO, Pb, As, Cr, Mn, and Fe by using colorimetric, micrometric, and gasometric methods. All samples were taken by aspiration. The mean concn. of dust varied in the 5 areas from 0.20 to 2.52, while max. concn. was 0.70–5.54 mg./m.³ The dust particle size was smaller than 5 μ in 80% of the particles. The concn. of soot was higher by a factor of 1.5–2.5 than the Bulgarian norm. The

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A 12478 (contd)

mean concn. of Pb was 0.0025–0.0041, mg./m.³, i.e. higher by a factor of 4–6 than the norm, and max. concn. was higher by a factor of 14. The concn. of Mn did not exceed the norm. The mean concn. of As was 0.003–0.005 mg./m.³ The norm of SiO_2 (0.18 mg./m.³) was exceeded by a factor of 1–4.5. The max. concn. of H_2SO_4 aerosol, detected during the winter months, was 0.38 mg./m.³ The mean concns. of H_2S, CO, N oxides, aldehydes, and HCHO were as follows: 0.03–0.006, 5.7–13.0, 0.0004–0.009, 0.002–0.007, and 0.001 mg./m.³, resp. The bodily growth measured in 50 children was not affected. The medical reports of all investigated persons living more than 5 years in the town were checked with regard to 13 selected diseases. The overwhelming increase of morbidity was established in comparison with the control town, esp. in conjunctivitis, rhinopharyngitis, laryngitis, and bronchitis. From the biochem. point of view, the blood levels of total and reduced glutathione and pyruvic acid were detd. in 50 children of the age of 12–14 years. In addn., the same detns. were carried out in 15 rabbits. The decarboxylation rate in red cells were also detd. (Abbreviated abstract)

See also: A 12402, A 12406, A 12408, A 12429, A 12431, A 12443, A 12450, A 12485, A 12498

5. Effects on humans, animals, vegetation, etc

A12479 02143, 02311, 02715, 03089, 03201

Anderson, W.A.D.

ASBESTOS AND LUNG CANCER

Smokeless Air, Summer 1968, vol. 38, (146), 245. (L)

Every time a person applies his car brakes, he may be polluting the air with a substance suspected of causing cancer, according to Dr. W. A. D. Anderson, of the University of Miami School of Medicine.

The substance is asbestos, widely used in brake linings. It also is found in roofing and insulation.

Dr. Anderson has found tiny asbestos fibres in the lungs of 31 per cent of the men and 20 per cent of the women in a group of 500 persons studied at random in Miami.

"Surveys in other cities have shown asbestos in the lungs of up to 50 per cent of cross-sections of the population," says Dr. Anderson in a report released recently at a symposium for science writers sponsored by the American Cancer Society.

A12480 02241, 02672, 03243, 03315, 03354, 03654, 03777, 03962, 04017, 05810, 05814

Anon.

(U.S. NATIONAL CROP LOSSES OF $500 MILLION PER YEAR DUE TO AIR POLLUTANTS)

Air Engng, May 1968, vol. 10, 22. (L)

AN AGRONOMIST at the University of Utah has stated that national crop losses of $500 million a year are the direct result of air pollutants. PAN (peroxacetyl nitrate), ozone, ethylene, sulfur dioxide and oxides of nitrogen have been cited as the chief causes of damage to timber and wood fibres, and have been noted to cause damage as much as 60 miles aways from their source. In Califorina, where agronomic and crop losses exceed $100 million a year, damage to vegetation in Yosemite and Sequoia National Parks has been attributed to the distant Los Angeles smog.

A12481 03411, 03555, 03627

Aronova, G.V.

MECHANISM OF THE PRIMARY INTERACTION OF SILICON DIOXIDE WITH A BIOSUBSTRATUM

(In Russian)

(CA)

Bor'ba

Silikozom, Akad. Nauk SSSR, Sb. Statei 7, 268-71(1967).

Silanolic groups (SiOH) present on the surface of particles of SiO_2 powder are suspected of being the true pathogen of silicosis. A partial or total substitution of OH- radicals in silanolic groups by CH_3- was carried out by a treatment of the SiO_2 powder with trimethylchlorosilane. This substitution caused a decrease in the pathogeneity of the powder. Lower wts. of lungs and lymphatic glands and lower contents of oxyproline and lipids in lungs were found in rats exposed to modified SiO_2 powder as compared with rats exposed to normal SiO_2. However, they were still significantly higher than those in control rats. Simple pneumoconiosis without specific silicotic changes was found histol. after modified SiO_2.

5. Effects on humans, animals, vegetation, etc

A12482 02030, 02427, 02992, 03013, 03331, 03492, 03555, 03799
Balogh, L.
THE EFFECT OF IODINE AEROSOLS OF DIFFERENT AIR MASSES ON THE HEAT PRODUCTION OF MAMMALS
Biometeorology, vol. 2, part 1, p. 92, (Proceedings of the Third International Biometeorological Congress, 1-7 Sept. 1963), Pergamon Press, Oxford (etc.) 1967

According to previous investigations by the author, there was a relationship between the iodine aerosol content in the air and the heat production in rats (L. Balogh and A. Palfy: Air iodine content and energy exchange of the rat. Acta physiol. Hung. 18, 65, 1960). Heat production was high with a low iodine aerosol content and decreased with increasing iodine in the air up to 0.3µg iodine/m^3 and increased again with a further increase of iodine concentration (0.5 µg/m^3). The author reported about the role of the thyroid in this

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relationship. It was found that with a higher content of medium sized iodine aerosols in the continental air masses there was a lower heat production and 132 I uptake while there was a higher heat production and radioiodine uptake with maritime air masses with a lower content of large sized iodine aerosols.

A12483 02386, 02914, 03777, 03880; 03799
Battigelli, M.C.
SULFUR DIOXIDE AND ACUTE EFFECTS OF AIR POLLUTION
J. Air Pollut. Control Ass., July 1968, vol. 18, 445-446. (L)

Summary of paper read at the Symposium on Air Quality Criteria, New York, 4-5 June 1968, looks critically at the discrepancy between the alleged disastrous effect of air pollution on health and the inconspicuous concentration of SO_2 measured in the air, and infers that any measurable effect of urban air pollution on the health and disease of exposed populations does not appear to involve SO_2 in its mechanism.

A12484 02030, 02246, 02630, 03555
Beresyuk, G.S.
SOME PHYSICOCHEMICAL PROPERTIES OF ELECTRICALLY CHARGED AEROSOLS. (In Russian)
(CA)

Aerozonis. Gig. Tr., Leningrad. Nauch.-Issled. Inst. Gig. Tr. Profzabol. 1966, 101-5.
The change in charge of cryst. aerosols in satd. aq. vapors was detd. The effects of hydration on the chem. reaction rate were detd. in cryst. olivine and pyroxenite. Prolonged expts. on white rats indicated that inhaled fresh aerosol had more harmful effects than did hydrated aerosol.

5. Effects on humans, animals, vegetation, etc

A12485 02040, 02461, 02613, 02615, 02914, 03053, 03535, 03542, 03777; 02692, 03240; 05310

Bogusz, W., et al.

EFFECT OF AIR POLLUTION IN THE GOP (UPPER SILESIAN INDUSTRIAL DISTRICT) ON THE UPPER RESPIRATORY TRACT OF A SELECTED GROUP OF SCHOOL CHILDREN. (In Polish) (APCA)

Otolaryngol. Polska. (Warsaw) 21 (6), 801–3 (1967).

Air pollution in Poland causes economic losses estimated at 8 million zloty annually and, in addition, it exerts a noxious influence on human health. This condition is acute in Katowice province, where 23% of the Polish labor force is employed on 3% of the land, and particularly affects the GOP, an area of 2000 km² with 2800 people per km². Some 733 school children from the area of Chorzów, in the center of the GOP, were studied over a 7-year period (1959–1966). The most common respiratory illness was rhinitis (31% of Group A, from Chorzów Stary, and 26% in Group B, from Katowice-Ochojec). Tonsillitis was reported in 9.2% of Group A and 19% in Group B, and allergic rhinitis in 58% and 8% respectively. It is evident that air pollution has an effect on the incidence of ordinary and allergic rhinitis. The inverse relationship of tonsillitis to air pollution leads to the supposition that some fractions in the polluting emissions may stimulate the lymphatic system. The highest pollution was reported from the area of a nitrogen (contd)

A12485 (contd)

plant, with an average dust fall of 602.28 g/m²/month and a daily average SO_2 concentration of 2.21 mg/100 cm² PbO_2. Chemical analysis of the dust revealed 74% inorganic, 25% organic, and 0.5% tarry substances. Data from low pollution points in the Katowice-Ochojec suburban area showed an average dust fall of 23.03 g/m²/month and a daily average SO_2 concentration of 0.91 mg/100 cm² PbO_2.

A12486 02119, 02246, 02347, 02688, 03241

Britz, W.E., et al.

A DYNAMIC FLOW GASSING CHAMBER FOR TOXICOLOGY STUDIES WITH SPECIAL REFERENCE TO ITS USE WITH NO_2 (APCA)

Aerospace Medical Division (AFSC), Brooks Air Force Base, Texas, USAF School of Aerospace Medicine, Proj. 6302, Task 630207, SAM-TR-67-80, p. 12 (Sept. 1967).

To test the toxicity of nitrogen dioxide/nitrogen tetroxide and other gases, it was necessary to construct an exposure chamber for small laboratory animals. This report describes the construction and operation of a small dynamic flow gassing chamber for studying toxic gas inhalation. Special attention is given to its use with NO_2/N_2O_4 and the system for monitoring the concentration of gas.

(Abbreviated abstract)

A12487 03118, 03777, 03962; 03799

Daines, R.H.

SULFUR DIOXIDE AND PLANT RESPONSE

J. Air Pollut. Control Ass., July 1968, vol. 18, 446. (L)

Summary of paper read at the Symposium on Air Quality Criteria, New York, 4–5 June 1968. The inconclusive nature of much of the work on the effect of SO_2 fumigations on plants is commented on, with reference to the published literature.

A12488 02036, 02263, 02914, 02995, 03541, 03642

Deleanu, M.C. and Frits, T.

NON-SPECIFIC BIOLOGICAL ACTION OF AIR IONS. (ACTION BIOLOGIQUE NON-SPÉCIFIQUE DE L'AÉROIONISATION). (In French; English summary)

Biometeorology, vol. 2, part 2, p. 1011–1015, 16 refs., (Proceedings of the Third International Biometeorological Congress, 1–7 Sept. 1963), Pergamon Press, Oxford (etc.), 1967

Experiments were undertaken on the role of moderate concentrations of air ions (5,000 to 20,000 ions/cm³) in different biological processes. Negative air ion therapy had favourable results in neurotic illness, gastric ulcer, bronchial asthma and skin disease and improved the performance of sportsmen. From the multiplicity of the effects it is concluded that the biological action of aeroionization is non-specific.

5. Effects on humans, animals, vegetation, etc

A12489 02229, 02320, 02386, 02914, 03731, 03871; 03799

Dinman, B.D.

PATHOPHYSIOLOGIC DETERMINANTS OF COMMUNITY AIR QUALITY STANDARDS FOR CARBON MONOXIDE

J. Air Pollut. Control Ass., July 1968, Vol. 18, 444. (L)

Summary of paper read at the Symposium on Air Quality Criteria, New York, 4-5 June 1968. The particular point was made that the ability of urban concentrations of CO to drive this gas into the body at a level as low as 30 ppm does not compare with the gradient produced by 400-475 ppm CO found in cigarette air streams.

A12490 02030, 02615, 02869, 02914, 02915, 03004, 03488, 03691, 03731, 03976; 03799

Faith, W.L.

INERT PARTICULATES - NUISANCE EFFECTS

J. Air Pollut. Control Ass., July 1968, vol. 18, 446-447. (L)

Summary of paper read at the Symposium on Air Quality Criteria, New York, 4-5 June 1968, commenting on uncertainties in evaluation of atmospheric pollution by particulate matter: such evaluation involves, e.g., dustfall measurements which apparently do not replicate well; or attempting to correlate pollution by particulates with, e.g. visibility, with or without humidity being taken into consideration. Similarly, public opinion surveys as to atmospheric cleanliness show variabilities.

A12491 02237, 02271, 02523, 03777, 05610

Government Chemist

AIR POLLUTION AT THE BRITISH MUSEUM

London: H.M.S.O., 1968, Ministry of Technology, Laboratory of the Government Chemist Report for 1967, 81; SBN 11 470203 9, price £1.2.6. (L)

Concern was felt by the Trustees of the British Museum about the possible long-term effect of atmospheric pollution on the Elgin Marbles housed in the Duveen Gallery. It was wished to ascertain the amount of atmospheric pollution present, and then to ask if any improvement could be made. Consequently, at the request of the Ministry of Public Building and Works, air in the Gallery and on its roof was sampled by the Laboratory over a period of one week in winter and examined for sulphur dioxide. The concentration of this gas inside the gallery was found to range between 220 and 300 microgrammes per cubic metre of air and was somewhat higher on the roof. This concentration of sulphur dioxide can be expected in the centre of London. The proximity of a stack from an oil fired boiler which could, under certain weather conditions, greatly increase pollution of the air

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A12491 (contd)

in the gallery, made it particularly desirable that air purification plant should be installed. Filtration cells have been tested, to check the efficiency of removal of sulphur dioxide.

A12492 02119, 02209, 02353, 02914, 03120

Kimmerle, G.

BERYLLIUM. (In German)

(CA)

Handb. Exp. Pharmakol. 21, 87 pp.(1966). The occurrence, chem. properties, and application of Be are reviewed. The effect of Be on biol. systems, illnesses due to Be compds., industrial hygiene, and the detn. of Be in air were discussed.

5. Effects on humans, animals, vegetation, etc

A12493 03046, 03754, 03885, 03962
Kleinman, A.
LEAD RESIDUES ON GROWING FRUITS AND VEGETABLES
(CA)

Pestic Monit. J. 1 (4), 8-10(1968)(Eng). An investigation of Pb residues in crops grown near heavily traveled highways was carried out. Samples of mature fruit and vegetables from 4 areas of the country were tested. The Pb residues were related to distance of the plant from the highway, traffic load of the highway, and time exposed to these conditions.

A12494 02036, 02347, 02500, 02688, 02792, 02995, 03555
Krueger, A.P. and Levine, H.B.
THE EFFECT OF UNIPOLAR POSITIVELY IONISED AIR ON THE COURSE OF COCCIDIOIDOMYCOSIS IN MICE
(APCA)

Intern. J. Bioclimatol. Biometeorol. (Leiden) 11 (3), 279-88 (1967).

The course of coccidioidomycosis produced in mice by intranasal administration of arthrospores of *Coccidioides immitis* was adversely affected by exposure of groups of 40 young female albino mice (NAMRU) to air containing 3-4 $\times 10^5$ positive ions/cm^3. A significant number of mice became ill earlier than controls and the cumulative mortality among ion-treated animals was higher throughout the 30-day observation period (difference significant at the 97.5 level by chi-square analysis). The mechanism responsible for this effect is as yet unknown.

The air ion exposure chamber used is described and diagrammed. In a separate series of experiments, mice exposed to positive air ions for 7 days prior to infection and mice surviving challenge with arthrospores exposed for 7 days to positive ions beginning on the 47th day post infection exhibited no increased mortality nor increased fungal numbers in pulmonary tissues, livers, and spleens.

(Abbreviated abstract)

A12495 02030, 02316; 02119, 02246, 03241, 03700, 03800
Strandberg, L.
CHANGES IN THE NO_2 ABSORPTION OF THE RESPIRATORY TRACT WHEN EXPOSING RABBITS TO NO_2 TOGETHER WITH CARBON PARTICLES. (In Swedish)
(APCA)

Nord. Hyg. Tidskr. (Copenhagen) 48 (1), 8-12 (1967).

Groups of rabbits were exposed to NO_2 (15-65 ppm). One group was exposed to NO_2 without particles, another group to NO_2 plus carbon particles (most particles over 0.25 μ). The third group was also exposed to NO_2 plus carbon particles (most less than 0.25 μ). Gas absorbtion was then studied using a method previously described. Rabbits exposed to NO_2 and carbon particles absorbed more NO_2 in the upper respiratory tract than the NO_2-exposure group. Differences in the absorbtion pattern and the respiratory pattern when comparing the two carbon particle groups could also be observed. The changed NO_2 absorbtion pattern in the presence of carbon particles may be the result of synergistic actions.

A12496 02022, 02205, 02229, 02311, 02640, 03607, 03700
Kutscher, W., Tomingas, R. and Weisfeld, H.P.
STUDY OF THE HARMFUL EFFECTS OF SOOT PARTICLES WITH SPECIAL REFERENCE TO THEIR CARCINOGENIC EFFECT. 5th Report. ELUTION OF 3,4 BENZOPYRENE BY MEANS OF BLOOD SERUM AND SERUM PROTEINS. (UNTERSUCHUNGEN ÜBER DIE SCHÄDLICHKEIT VON RUSSEN UNTER BESONDERER BERÜCKSICHTIGUNG IHRER CANCEROGENEN WIRKUNG. 5. Mitteilung. ÜBER DIE ABLÖSBARKEIT VON 3,4-BENZPYREN DURCH BLUTSERUM UND EINIGE EIWEISSFAKTOREN DES SERUMS). (In German)
(APCA)

Arch. Hyg. Bakteriol. (Munich) 151 (7), 646-55 (Nov. 1967).

The capability of bovine serum to separate benzopyrene from soot was tested, using fine-grained soot, referred to as Corax L (mean grain size 27.8 mm), inactive soot MT, and flame soot 101 (mean grain size 400 and 115 nm, respectively). Two experiments were first conducted at room temperature without agitation and the remainder were conducted at 37°C with 30 min mechanical agitation. Results show that, whereas no benzopyrene was eluted after 100 hr incubation at 20 and 37°C without agitation, pyrobenzene was found in the serum after 7 hr with agitation. Tabulated data also show that with

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5. Effects on humans, animals, vegetation, etc

A12496 (contd)

Corax L a maximum of 10% of the adsorbed benzopyrene was found in the serum after 60 hr incubation, while with soots MT and 101 the percentage of eluted benzopyrene was about 20 and 13%, respectively, with this maximum being reached after 6 and 4 hr, respectively. The first traces of benzopyrene appeared in the serum after 7 hr elution with Corax L, while only 15 min were required with soots MT and 101. Exhaustive extraction of 0.1982 g of soot MT with 2740 μg adsorbed pyrobenzene at 37°C was attempted by repeatedly adding fresh serum hourly, but only 13% of the pyrobenzene was extracted after 6 hr, most being eluted during the first 3 hr. Incubation of single fractions of albumin, α, β, or γ globulin and Corax L with 10,210 μg/g adsorbed benzopyrene shows that only albumin will elute benzopyrene.

A12497 02022, 02030, 02205, 02613, 02640, 03089, 03331, 03555, 03700

Kutscher, W., Tomingas, R. and Weisfeld, H.P.

STUDY OF THE HARMFUL EFFECTS OF SOOT PARTICLES WITH SPECIAL REFERENCE TO THEIR CARCINOGENIC EFFECT. 6th Report. ELUTION OF 3,4-BENZOPYRENE FROM SOOT BY RAT LUNG TISSUE. (UNTERSUCHUNGEN ÜBER DIE SCHADLICHKEIT VON RUSSEN UNTER BESONDERER BERÜCKSICHTIGUNG IHRER CANCEROGENEN WIRKUNG. 6. Mitteilung. ELUTION VON 3,4-BENZPYREN AUS RUSSEN DURCH LUNGENGEWEBE VON RATTEN). (In German)

(APCA) *Arch. Hyg. Bakteriol.* (Munich) 151 (7), 656–61 (Nov. 1967).

Using industrial soot Corax L (average particle size 27.8 nm) and Mannheim airborne dust (average particle size 52 nm), it is found that benzopyrene adsorbed to soot particles can be eluted and adsorbed by rat lung tissue. Physiological saline and 4*N* KOH do not extract benzopyrene from soot. Weighed amounts of Corax L and Mannheim airborne dust were incubated at 37°C for 2–1080 hr with various solutions obtained from rat lungs; all mixtures were mechanically agitated for 30 min before incubation and were examined for benzopyrene at specified intervals. Tabulated data show the salt solution

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A12497 (contd)

filtrate made by incubating fresh rat lungs for 26 hr, contained no benzopyrene; the suspension of chopped, bloodless rat lungs in physiological saline extracted benzopyrene in about 15 hr from both soots; lung material which had been incubated with physiological saline for 26 hr extracted benzopyrene after 26 hr; and the water-soluble parts of the cell are mainly involved in the elution of benzopyrene. The experiments with distilled water incubation further prove that the portion eluting the benzopyrene lies in the cell and is not bound to the cell framework.

A12498 02030, 02036, 02040, 02246, 02486, 02594, 02914, 03576, 03658, 03871, 05610, 02214

Lawther, P.J., Ellison, J.McK., and Waller, R.E.

SOME MEDICAL ASPECTS OF AEROSOL RESEARCH

Proc. Roy. Soc. A, 29 Oct. 1968, vol. 307, 223-234, 31 refs. (L)

The relevance and limitations of work on industrial aerosols with regard to the effects of particles found in urban and domestic air and in tobacco smoke (which latter may well be the most important of all the commonly inhaled aerosols) are discussed. Particular reference is made to pollutants found in the air in the City of London.

5. Effects on humans, animals, vegetation, etc

A12499 02150, 02217, 02614, 02914, 02995, 03542, 03642; 02613, 03161, 03444

Minkh, A.

BIOLOGICAL AND HYGIENIC SIGNIFICANCE OF AIR IONISATION

Biometeorology, vol. 2, part 2, p. 1016-1024, 4 refs., (Proceedings of the Third International Biometeorological Congress, 1-7 Sept. 1963), Pergamon Press Oxford (etc.), 1967

A study of *atmospheric ionization* at the *health resorts* and comparison of the results of these studies with the patients' well-being and their clinical symptoms have made it possible to regard ionization as a new bioclimatological factor. An investigation of the physiological action of *artificially* ionized air confirms the biological significance of air ionization. Physiological mechanisms involved in the action of air ionization have not as yet been precisely established. The main route of the ion action is considered to be the respiratory tract. The action of atmospheric ions through the skin is not excluded. The most complete study was that of the physiological action of negative ions widely used in therapeutic practice. Artificial air ionization may be used for the precipitation of *dust* and *microorganisms* in closed rooms. In an industrial establishment with powerful ion-formation sources, high ion concentrations may have an unfavourable effect on the organism.

A12500 02036, 02119, 02246, 02613, 03542, 03777

Nawa, K.

EFFECTS OF SULPHUR DIOXIDE CONCENTRATION IN THE ATMOSPHERE ON DUST EXPULSION IN THE RESPIRATORY TRACT. (In Japanese)

(CA)

Nagoya Shiritsu Daigaku Igakkai Zasshi 18(1), 49-71(1967). Matured male rabbits were exposed to air contg., resp., 3, 5, 10, and 20 ppm. SO_2, 20 min. daily for 5 weeks consecutively. The dust expulsion rate is not affected by 3 ppm. SO_2, increases during the 1st 2 weeks and then recovers in 5 ppm. SO_2, and decreases gradually during the 1st 3 weeks but recovers very slowly in 10 and 20 ppm. SO_2. In 3 ppm. SO_2, body wt., blood cell counts, Hb content, and hematocrit value are not changed. These values show initial increases followed by rapid recovery in 5 ppm. SO_2, and decreases with slow recovery in >10 ppm. SO_2.

A12501 02271, 02390, 03749, 05610

Negus, K.J.

STONE CLEANING

Smokeless Air, Summer 1968, vol. 38, (146), 246-249. (L)

A NEW significance was given to the business of cleaning and restoring buildings by the passing of the Clean Air Act of 1956, whereby local authorities had to designate "smoke controlled" areas in which efficient methods of heating have to be installed to prevent, amongst other things, erosion by smoke. The reduction of smoke pollution in this way meant that for the first time the effect of restoring properties to their former dignity would be long lasting. In an area of atmospheric pollution the periods between cleanings are estimated by London Stone to be four years whilst in a smokeless zone they will be anything up to 10 years.

A12502 02119, 02311, 02347, 02588, 03555, 03826, 03880; 02426; 02214

Pfitzer, E.A.

TOXICOLOGY

Industrial Hygiene Highlights, vol. 1, published by Industrial Hygiene Foundation of America, Inc., Pittsburgh, 1968, p. 244-270, 154 refs. (L)

This chapter of the book surveys work published mainly in 1966-1967 on the subjects of toxicity testing methodology, test data handling by computer, and individual toxicity tests (involving animals, humans) with a wide range of materials, viz. metals and their compounds, mineral dusts, irritant gases, pesticides, hydrocarbons (including halogenated hydrocarbons).

5. Effects on humans, animals, vegetation, etc

A12503 02229, 02934, 03555, 03777

Bakhnovska, N.M.

EFFECT OF HYDROGEN SULPHIDE AND SULPHUR DIOXIDE ON ANIMALS DURING THE SIMULTANEOUS PRESENCE OF THE GASES IN THE AIR. (In Russian)
(CA)

Vop. Kommunal. Gig. 6, 121-7(1966). The research was carried out on adult male rats, of white and gray pure strains. The exptl. animals were exposed to an atm. contg. H_2S and SO_2 in the concn. of 0.0085 and 0.57 mg./m.^{3}, resp. No difference in the morphological aspect of blood was found between control and exptl. animals. The catalase activity, detd. by the Bach-Zubkov method, decreased from a value of 0.57×10^{-4} for the controls to 0.42×10^{-4} for the exptl. rats. The cholinesterase activity of the whole blood was studied following the Pokrovsky method as modified by Martinov. A marked redn. (2.81%) in the cholinesterase activity occurs in the exptl. animals. The phagocyte no. was the same in the exptl. rats and in the controls (55.6 vs. 55.0), although the phagocyte index was lower in the former group (7.09 vs. 10.85). The mixt. of the 2 S compds. brings about no change in the effective phagocytic properties of the blood. The functional state of the central nervous system was studied by the Kotliarevskii method. The rats were exposed to a system of

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A12503 (contd)

stimuli consisting of bell-light-bell-buzzer. In the control animals the bell reflux could be evoked at the 47th sequence, but in the exptl. animals only at the 70th. The light reflex was evoked at the 28th and 59th sequences, resp. The threshold of conditioned reflexes to stimulations of different intensities was twice as high in the experimental animals as in the controls (170 and 82 for the bell and 58 and 28 for the light, resp.). The reflex latent period in the exptl. animals and in the controls was 0.97 sec. and 3.60 sec. for the bell and 2.49 sec. and 3.74 sec. for the light, resp. The functional state of the animals was studied by means of the swimming test. Swimming time was 11.6 min. for the controls and 5.5 min. for the exptl. rats. The luminescence leukocyte was also studied: the luminescence diagram for the control rats showed the values of 59.0, 31.2, and 9.8 and for the exptl. animals it gave 31.8, 52.3, and 15.9.

A12504 02320, 02347, 02613, 03177, 03241, 03411, 03555, 03627

Shevchenko, A.M. and Jagauz, F.O.

ADSORPTION OF EXPLOSIVE GASES ON DUST PARTICLES AND THEIR EFFECT ON THE DEVELOPMENT OF THE PNEUMOCONIOTIC PROCESS. (In Russian)
(CA)

Bor'ba Silikozom. Akad. Nauk SSSR, Sb. Statei 7, 279-84(1967). Dust, formed in the chief stages of subterranean mining of ores, contains considerable amts. of CO and NO_2 (0.007 and 0.2265 mg./g. dust). The effect of explosive gases adsorbed on dust particles on development of pneumoconiosis was studied in albino mice, kept in special dust chambers. Quartz dust, contg. 91.2-92.7% of free SiO_2, was used as gas adsorber; 88% of dust particles did not exceed a diam. of 5 μ; CO and N oxides were used as adsorbates. Av. dust content in the chamber was 80-115 mg./m.^{3}, mean CO content in the dust was 0.0126 mg./g., that of NO_2 0.0358 mg./g. Mean wt. of animals did not differ much from that of controls at the end of the expt. The raw wt. of the lungs and of the dry residue was higher in exptl. animals. The content of proteins of connective tissue was the highest in animals inhaling dust with adsorbed N oxides, the lowest in those inhaling pure quartz dust. Symptoms of chronic desquamative endobronchitis were observed in almost all cases. (Abbreviated abstract)

5. Effects on humans, animals, vegetation, etc

A12505 02119, 02914, 03047, 03731; 03799
Stoppe, G.J.
AIR QUALITY CRITERIA - LEAD
J. Air Pollut. Control Ass., July 1968, vol 18, 447. (L)

Summary of paper read at the Symposium on Air Quality Criteria, New York, 4-5 June 1968, asserts that there is, as yet, no convincing evidence that the present body burdens of lead from the air are causing any deleterious effect on human health. If, however, the need for setting an air quality standard at the present time was so strongly felt, then such a tentative standard should be based on data provided by (1) experiments conducted by Kehoe using human volunteers at Kettering Laboratory, and (2) animal studies conducted by F.G. Hueters and others.

A12506 02036, 02119, 02229, 02246, 02320, 02613, 03542
Sugawara, T.
EFFECTS OF CARBON MONOXIDE CONCENTRATION IN THE ATMOSPHERE ON DUST EXPULSION FROM THE RESPIRATORY TRACT. (In Japanese)
(CA)

Nagoya Shiritsu Daigaku Igakkai Zasshi 18(1), 23-48(1967). Matured male rabbits were exposed to air contg. 0.01, 0.05, 0.1, and 0.5% CO for 20 min. daily for 5 weeks consecutively. In 0.01, 0.05, 0.1, and 0.5% concn., the dust expulsion rate decreases during the initial 1, 2, 2, and 3 weeks, resp., which followed by gradual recovery to normal rate after 2 and 4 weeks, resp., in the former 2 cases but not to normal levels in the latter 2 cases. In the CO concn. examd., body wt., blood cell counts, Hb content, and hematocrit value also decrease and carboxyhemoglobin and leukocyte counts increase in response to the concn. Such changes show gradual recovery in <0.1% CO, but very little in 0.5% CO.

A12507 02119, 02914, 02921, 03241, 03315, 03374, 03654, 03731; 03312; 03799
Tabershaw, I.R.
OXIDANTS: AIR QUALITY CRITERIA BASED ON HEALTH EFFECTS
J. Air Pollut. Control Ass., July 1968, vol. 18, 445. (L)

Summary of paper read at the Symposium on Air Quality Criteria, New York, 4-5 June 1968. The evidence of adverse health effects on humans and animals of smog and its individual pollutants, NO_2, ozone, and hydrocarbons, was examined.

A12508 02921, 03234, 03241, 03315, 03354, 03654, 03800, 03962; 03799
Taylor, O.C.
EFFECTS OF OXIDANT AIR POLLUTANTS
J. Air Pollut. Control Ass., July 1968, vol. 18, 445. (L)

Summary of paper read at the Symposium on Air Quality Criteria, New York, 4-5 June 1968. The paper dealt with the effects of oxidant pollutants on vegetation, with particular reference to synergistic effects of several pollutants acting together.

5. Effects on humans, animals, vegetation, etc

A12509 02119, 02201, 02214, 02514, 03089, 03872, 03880

Truhaut, R.

DETERMINATION OF A TOLERABLE LIMIT OF BENZENE IN WORK ENVIRONMENTS (In French) (CA)

Arch. Mal. Prof., Med. Trav. Secur. Soc. 29(1-2), 5-22(1968). Studies on the toxicity of benzene made by European and American investigators are reviewed. Short exposures to benzene vapors may have a variety of effects, from slight nervous complications to death, depending on the concn. of benzene in the air, the duration of the exposure, the no. of exposures, and the susceptibility of the individual exposed to the benzene. Repeated absorption of small doses results in chronic toxicity, causing damage to the liver and bone marrow which result in aplastic anemia, agranulocytosis, thrombocytopenia, and occasionally leukemia. The myelotoxic effects are characteristic of benzene and distinguish it from other industrial hydrocarbons. Though benzene itself seems to have few cytotoxic effects, it enhances those of its phenolic metabolic products, which are highly cytotoxic. The histol. alterations in the pulmonary tissues of subjects exposed to benzene are similar to those of bronchial pneumonia. Humans exhibit higher sensitivity to benzene, with respect to its myelotoxic effects, than lab. animals. Because of the lack of information (contd)

A12509 (contd)

on the metabolic fate of benzene, of correlation of data on its toxicological effects in lab. animals and human subjects, and incompleteness of data on its toxicology, the basis on which to establish tolerance limits for this industrial solvent is very inadequate. The value of 25 ppm. accepted in the U.S.A. is considered too high. Tentatively, 5 ppm. is offered as a safe max. limit until further and more detailed studies advise otherwise. 103 references.

A12510 02040, 02042, 03173, 05820

U.S. National Air Pollution Control Administration

(CHANGE IN CONTROL - EFFECT OF AIR POLLUTION ON MILK)

J. Air Pollut. Control Ass., Aug. 1968, vol. 18, 504-505. (L)

While placing the National Air Pollution Control Administration (NAPCA) (formerly the National Center for Air Pollution Control) under the Consumer Protection and Environmental Health Service headed by newly appointed Commissioner Charles C. Johnson, Jr. is announced by H. E. W's Assistant Secretary Philip R. Lee as a constructive change, Rep. Emilio Q. Daddario (D.-Conn.), Chairman of the House Subcommittee said it "is a step precisely in the wrong direction. Air pollution has nothing in common with milk inspection, for example." No doubt (contd)

A12510 (contd)

every reader will get the able Congressman's point, but he has chosen an unfortunate example. Scientists working in the Department of Agriculture laboratories in Washington on the drying of milk have found that a rise in concentration of atmospheric pollutants seriously affects the flavor of the product.

The new agency also includes the Food and Drug Administration and the Environmental Control Administration, each headed by an assistant Commissioner, of which the former Director of the National Center for Air Pollution Control, Dr. John T. Middleton, will be one.

The address for NAPCA is: 801 North Randolph St., Arlington, Va. 22203 (phone 703 - 557-1221).

5. Effects on humans, animals, vegetation, etc

02046, 02320, 02914

A12511 U.S. National Research Council, Committee on the Effects of Atmospheric Contaminants on Human Health and Welfare

(1st PROJECT: STUDY OF EFFECTS OF CHRONIC LOW-LEVEL CO EXPOSURE)

J. Air Pollut. Control Ass., Aug. 1968, vol. 18, 504. (L)

The study will be supported in part by the Coordinating Research Council of the automotive and petroleum industries. It will review the current status of knowledge on the effects of carbon monoxide on human beings and will analyze the tools available for the development of such knowledge in order to determine what further work may be required to bring our knowledge in this area to an acceptable level.

The Committee plans to complete its report on this study within six months. If the report is deemed by the National Academy of Sciences to contain sufficiently valuable information, the document will be published for distribution as an Academy publication.

A12512 02386, 02914, 03541, 03654, 05251

Watanabe, K. et al.

SMOG AND SO-CALLED "TOKYO-YOKOHAMA ASTHMA"

Biometeorology, vol. 2, part 1, p. 29, (Proceedings of the Third International Biometeorological Congress, 1-7 Sept. 1963), Pergamon Press, Oxford, 1967

To STUDY the so-called Tokyo-Yokohama Asthma a mass survey was carried out on 2219 persons in the Yokohama-Kawasaki area of Japan with 474 persons in a rural district as control. The previous medical history of 237 asthmatic outpatients was also studied. An increased incidence of cough with sputum and a significant decrease in vital capacity were found in the subjects in the Yokohama-Tokyo area, but there was no increase of shortness of breath. Studies of FEV/VC and bronchial-acetylcholine threshold were carried out and the results were compared with and verified by animal experiments. No definite evidence was obtained for the existence of "Tokyo-Yokohama Asthma".

A12513 02143, 02613, 03283, 03555

Wozniak, H.

EFFECT OF CERTAIN INDUSTRIAL DUSTS ON DEHYDROGENASE ACTIVITY AND OXYGEN UPTAKE IN CELLS DERIVED FROM THE PERITONEAL CAVITY OF RATS. (In Polish)

(CA)

Med. Pr. 18(6), 634-40(1967). Dehydrogenase activity (expressed in γ reduced 2,3,5-triphenyltetrazonium chloride/10^6 leukocytes) measured in peritoneal cells derived from rats 48 hrs. on intraperitoneal administration of 40 mg. dust suspended in 5 ml. sterile Tyrode medium amounted to 11.6 in controls; 11.7 in animals treated with C (1.2 μ); 14.9 with roasted amorphous asbestos (2.2 μ); 15.7 with cryst. asbestos (5.5 μ); and 18.3 with SiO_2 (1.6 μ). No substantial differences were observed in the O uptake by those cells, which varied within the limits of 25.35-29.78 μl./10^6 leukocytes for both control and treated animals.

See also: A 12403, A 12404, A 12406, A 12425, A 12434, A 12436, A 12460, A 12476, A 12478, A 12547, A 12550

6. Administration (programmes, standards, legislation)

A12514 02042, 02461, 03471, 05880
Air Pollution Control Association, President
A.P.C.A.'s PRESIDENT'S MESSAGE: A NATIONAL POLICY ON ENVIRONMENTAL CONTROL
J. Air Pollut. Control Ass., Sept. 1968, vol. 18, 572, 574. (L)

This message by J.S. Lagarias refers to the expression of a desire for a national policy on environment control, which was voiced at the Joint U.S. Senate-House of Representatives Colloquium of 17 July 1968, and in this context presents a statement on the role of existing agencies, inter-agency actions, the need for economic incentives, use of existing authority, the need for a commission (which may report through the National Academy of Sciences) to advise Congress of environmental status and objectives, and appropriation of funds by Congress.

A12515 02046, 02681, 03658, 05340
Anon.
IN JOHANNESBURG
(Smokeless Air, Summer 1968, vol. 138, (146), 251).

The first air polluters in Johannesburg's new central smokeless zone have been given warnings to stop bellowing smoke or face R200 fines.

Yesterday was the first day on which air pollution by smoking chimneys became an offence in central Johannesburg, Hillbrow, Wanderers View and parts of other surrounding suburbs.

The City Health Department's six anti-pollution inspectors warned individual property owners with smoking chimneys that they were breaking the law.

The Air Pollution Control Officer, Mr. L. E. Tucker, said today that his office had been "a madhouse" with people reporting smoke and many others asking for extensions on the smoke ban. *Johannesburg Star, 23 January, 1968*

A12516 02047, 02320, 02543, 02682, 02921, 03120, 03201, 03359, 03731, 05800
Anon.
BACKGROUND DATA PROPOSED FEDERAL EXHAUST EMISSION STANDARDS FOR 1970 CARS
Air Engng, May 1968, vol. 10, 16. (L)

The standards proposed for 1970 do not require direct measurement of exhaust volume. Instead, the proposed 1970 standards are based on a relationship that the National Center for Air Pollution Control has been able to define fairly precisely between vehicle weights and exhaust volume.

The proposed 1970-model-year standards would limit all new cars to an exhaust emission of 2.2 grams of hydrocarbons and 23 grams of carbon monoxides per mile. The effect of the standards is to divide automobiles into ten weight classes, and to specify concentration limits for each class.

6. Administration (programmes, standards, legislation)

A12517 C2030, 02047, 02788, 02681, 02960, 03889, 05910

Anon.

NEW YORK CITY: TRAINING INCINERATOR OPERATORS

Air Engng, May 1968, vol. 10, 23. (L)

IN NEW YORK CITY operators and supervisors of oil heating and incinerator equipment must obtain a certificate which states they have successfully completed a course of training, under a provision of the City's local laws. Urging the support and cooperation of custodial staffs, Austin N. Heller, Commissioner, Department of Air Pollution Control said that anyone who operates an incinerator or a burner of residual oil "determines to a large extent the kind of air New Yorkers are breathing." The Commissioner estimated that the burning of heating fuel accounts for about 35% of the particulates in the City's air. Apartment house incinerators account for another 15% of particulates. The seven-week course will be held at 11 schools in the five boroughs.

A12518 02045, 02045, 05250

Anon.

JAPAN: PUBLIC NUISANCE LAW

Smokeless Air, Summer 1968, vol. 38, (146), 253. (L)

Public nuisances are defined as those things which have a detrimental effect on health and environment, on vegetation and on animal life. Air pollution, water pollution, offensive odours and noise are designated as public nuisances.

In those areas where pollution is already a serious menace, or where it may become so, the Prime Minister himself is responsible for the formulation of a "Public Nuisance Prevention Plan" to be implemented by the Governor of the province or district concerned with the Prime Minister's approval.

A12519 02048, 03359

Anon.

AIR POLLUTION FROM ENGINES

Smokeless Air, Summer 1968, vol. 38, (146), 255. (L)

The Science Research Council have awarded a £4,500 contract to Loughborough University's department of transport technology for research into atmospheric pollution by vehicle petrol engines. This is one of a number of projects being carried out by a research team led by G. G. Lucas, lecturer in the department, into various aspects of engine performance.

The aim is eventually to design a petrol engine of good optimum performance, particularly in this case by reducing air pollution with minimum loss of power and efficiency and a minimum of special appendages.

6. Administration (programmes, standards, legislation)

A12520 03731, 03799

Anon.

REPORT FROM THE SYMPOSIUM ON AIR QUALITY CRITERIA

J. Air Pollut. Control Ass., July 1968, vol. 18, 443-447. (L)

The symposium was held on 4-5 June 1968 at New York City under the sponsorship of the Air Pollution Control Association, the American Industrial Hygiene Association, the American Petroleum Institute, and the Industrial Medical Association (with its educational affiliate, the Occupational Health Institute). The report contains excerpts from the speech by E.Q. Daddario (from the House Subcommittee on Science, Research and Development) who said that federally directed science and engineering is not yet organised to meet (U.S.) national needs in managing the environment; and excerpts from, or authors' abstracts of, the eight principal papers presented at the symposium. A full proceedings, including discussions, is to be published in the Sept. issue of the J. Occup. Med.
(*For the individual abstracts, see A 12429, A 12483, A 12487, A 12489, A 12490, A 12505, A 12507, A 12508).

A12521 02042, 02045, 05880

Anon.

MODIFICATIONS ASKED FOR PENDING INTERSTATE COMPACTS

J. Air Pollut. Control Ass., Aug. 1968, vol. 18, 557. (L)

These compacts were referred to the Public Works Committee by the Senate Judiciary Committee in order that they could be analyzed in relation to the Air Quality Act of 1967. A letter to Senator James O. Eastland, Chairman of the Committee on Judiciary, unanimously approved by the members of the Public Works Committee, recommends modification of all three proposals in order to bring them into conformity with Federal Clean Air legislation.

While recognizing that the states entered into the compacts prior to enactment of the Air Quality Act last year, the Committee indicated that substantial revision would be required for these interstate air pollution control agencies to abate air pollution and implement ambient air quality standards within any air quality control regions shared by the party states.

The three compacts are: S. 2350, West Virginia-Ohio Air Pollution Control Compact; S. J. Res. 93, Mid-Atlantic States Air Pollution Control Compact; and S. 470, Illinois-Indiana Air Pollution Control Compact.

(Also: APPROVAL SOUGHT FOR INTERSTATE AIR POLLUTION COMPACTS. Anon. Envir. Sci. Technol., May 1968, vol. 2, 330-331. (L))

A12522 02045, 05180

Anon.

AIR POLLUTION - RAPID FIRE FROM BONN. (IMMISSIONS-SCHNELLSCHUSS AUS BONN).

(In German)

Chem. Ind., Düsseld., Oct. 1968, 698. (L)

Refers to the draft bill for Keeping the Air Clean and for Noise Abatement placed recently by the Federal German Health Minister, Fr. K. Strobel, before the Federal German Parliament (Bundestag) in Bonn for approval during its current session. The speed with which the bill is to be made law (to replace current jurisdiction in this field by the individual "Länder", i.e. local authorities) is criticised, particularly because of the difficulties caused thereby to industry.

6. Administration (programmes, standards, legislation)

A12523 02044, 02045, 03731, 05810
California Air Resources Board
CONTROL DISTRICT NEWS: DIVISION OF CALIFORNIA STATE INTO NINE AIR BASINS
J. Air Pollut. Control Ass., Aug. 1968, vol. 18, 558. (L)

The California Air Resources Board has approved a tentative plan for the division of the State into nine air basins, based on population distribution, geography, and meteorology. Board action is required by a law passed by the 1967 State Legislature.

Air quality standards will be developed for each of the basins next year. These standards will be enforced either by local air pollution control districts, regional commissions, or the State in cases where local authorities fail to act.

A12524 02030, 02043, 02047, 02642, 02681, 02960, 03268, 03658, 03731
City of Philadelphia Air Pollution Control Board
CONTROL DISTRICT NEWS: Revised Incinerator Regulations for the City
J. Air Pollut. Control Ass., Aug. 1968, 559. (L)

The Air Pollution Control Board has adopted revised incinerator regulations for the City which will prohibit the issuance of permits for the construction of new incinerators used in the disposal of ordinary apartment-commercial-industrial type refuse after Jan. 1, 1969.

The new regulations will also require that all existing incinerators, as well as those for which installation permits have been issued prior to that date, be equipped within one year of that date with air pollution control devices to meet stringent emission standards. These same equipment devices will also apply to new incinerators that replace units of similar size already in service at the same location.

All current incinerator owners will be required to give a commitment in writing by Feb. 1, 1969, that their units will be shut down, upgraded, or replaced, the Board said. The only construction of new incinerators permitted will be those utilized for specialized purposes, such as the destruction of pathological wastes by hospitals, veterinarians, and research laboratories, and in certain industrial processes.

A12525 02042, 03471, 05820
National Society of Professional Engineers
(STRONG AIR POLLUTION CONTROL POLICY)
J. Air Pollut. Control Ass., Aug. 1968, vol. 18, 505. (L)

A strong air pollution control policy was adopted by the National Society of Professional Engineers at its just concluded 34th Annual Meeting in Milwaukee. For some years this organization, comprising over 70,000 of America's registered professional engineers has, through its Pollution Committee, taken an active interest in air pollution control.

This policy statement, which recognizes the co-responsibility of all levels of government along with industry and private citizens, states that regulatory action should be the primary responsibility of State and local governments.

A 14-page booklet just issued, entitled, "The Engineering Challenge of Pollution Control," is available from The National Society of Professional Engineers, 2020 K St., N.W., Washington, D. C. 20006.

6. Administration (programmes, standards, legislation)

A12526 02047, 02642, 02960, 03658, 03731, 05904
New Jersey State Department of Health
CONTROL DISTRICT NEWS: Promulgation of Chapter 11 of New Jersey Air Pollution Control Code
J. Air Pollut. Control Ass., Aug. 1968, vol. 18, 558-559. (L)

The new code becomes effective on August 15, 1968. It was brought to public hearing as a proposed regulation on March 5, 1968.

The code, as promulgated, contains certain modifications of the originally proposed document, in response to testimony given.

Included in the new code's provisions are all incinerators of all sizes, whether municipal, industrial, commercial, residential, or other, except those in one or two-family dwellings or in multi-occupied dwellings containing six or less family units one of which is owner occupied. The regulation, in such wide-ranging applications as supermarkets, schools and colleges, apartment dwellings, hospitals, crematoria, office buildings, manufacturing plants, restaurants, department stores, laboratories, salvage operations, and many others, will affect the use of all old incinerators as well as the construction, installation, and use of all new incinerators.

Two years from the effective date of the code, no one will be allowed to use an existing incinerator unless it is of the multiple chamber type or a type approved by the department.

A12527 02028, 03135, 03192, 05908
New York State Department of Health
CONTROL DISTRICT NEWS: NETWORK OF 50 CONTINUOUS AIR MONITORING STATIONS
J. Air Pollut. Control Ass., Aug. 1968, vol. 18, 558. (L)

New York State has acquired the first in a network of 50 continuous air monitoring stations to be located throughout the State.

The first, at Rensselaer, near Albany, contains instrumentation to measure atmospheric concentrations of sulfur dioxide, nitric oxide, nitrogen dioxide, total oxidants, carbon monoxide, hydrocarbons, and aldehydes. Also included is meteorological equipment to measure wind direction, speed and gustiness, atmospheric pressure, temperature, relative humidity, precipitation, ultraviolet radiation, and toral sun radiation.

Other stations will be placed in operation by the State Health Department at Syracuse, Buffalo, Niagara Falls, Copake, New York City, Mamaroneck, Hempstead, Rochester, Kingston, and Elmira. An additional unit for research purposes will be located in Rensselaer. Thirty-nine other stations, designed to measure contaminants of local significance, will be deployed throughout the State.

A12528 02320, 02682, 02921, 03201, 03243, 03732, 03826, 05800
U.S. Department of Health, Education, and Welfare
NEW MOVES FOR EFFECTIVE CONTROL OF VEHICLE EMISSIONS
Envir. Sci. Technol., July 1968, vol. 2, 488. (L)

Proposed standards for 1970 model year motor vehicles (ES&T, January 1968, page 8)—including both domestic and imported automobiles, trucks, buses, and diesel powered motor vehicles—were adopted officially on June 4, with but one exception. Control of hydrocarbon evaporative losses from automobiles and light trucks is deferred until 1971 model vehicles. The 1970 standards control both emissions of hydrocarbons and carbon monoxide, but do not specify limits for nitrogen oxides. Prior to the adoption of 1970 standards, earlier standards required more stringent control of emissions from small cars. But 1970 standards make no distinction between car sizes. Rather, they limit all cars to the same amount of pollutants to be discharged. But, beginning with the 1970 model year vehicles, a number of changes will be made in the test procedure.

6. Administration (programmes, standards, legislation)

A12529 02046, 02047, 02237, 02642, 02788, 05160

Wiethaup, H.

ON THE APPLICATION OF SECTION 25, PARA. 2 OF THE (FEDERAL GERMAN) WORKS ORDER TO 'OLD PLANT', PURSUANT TO SECTION 16, PARA. 4 OF THE WORKS ORDER. (ZUR ANWENDUNG DES §25 ABS. 2 DER GEWERBEORDNUNG FÜR 'ALTE ANLAGEN' IM SINNE DES §16 ABS. 4 DER GEWERBEORDNUNG). (In German)

Staub, Oct. 1968, vol. 28, 415. (L)

A decision by the Darmstadt Court of Appeal in a recent action brought by the owner of an oil-fired boiler plant is reported. The Court ruled that the (Federal German) Works Statute relating to protection against pollution of the air by industrial emissions is enforcable in cases of 'old' as well as new industrial installations.

See also: A 12403, A 12405, A 12407, A 12432, A 12487, A 12489, A 12490, A 12505, A 12507, A 12510, A 12547

7. Methods and equipment for abatement

A12530 02030, 02137, 02214, 02320, 02328, 02448, 02682, 02684, 02690, 02914, 02921, 03004, 03046, 03201, 03243, 03268, 03359, 03374, 03423, 03654, 05800; 02543, 03658

Agnew, W.G.

AUTOMOTIVE AIR POLLUTION RESEARCH

Proc. Roy. Soc. A, 29 Oct. 1968, vol. 307, 153-181, 58 refs. (L)

The objectives of automotive air pollution research consist in understanding the nature of atmospheric effects and of vehicle emissions, and in developing concepts for the control of significant pollutants. Some of the progress which has been made in the U.S. towards these objectives is reviewed with respect to photochemical smog, carbon monoxide, polynuclear aromatic hydrocarbons, lead, and diesel smoke and odour.

A12531 02333, 02681, 03312, 03527, 03532, 03777; 03333

Air Preheater Co., Inc.

FLUE GAS SO_2 REMOVAL

British Patent 1,103,859, 21 Feb. 1968 (Application: U.S., 22 June 1964); 5 pp. (L)

Removal of SO_2 is effected by use of a reactor having several independent compartments containing porous catalyst beds which accelerate oxidation of SO_2 to SO_3, with ducts to direct the flue gas through the compartments. One or more compartments may be selectively isolated so that a purging gas may be passed to reactivate the catalyst while flue gases pass through the remaining compartments.

(Cf. Neth. Appl. 6507985; Abstract A 8148).

A12532 02033, 02043, 02144, 02790, 02960, 03658

Air Preheater Co., Inc.

PACKAGED WASTE INCINERATORS

J. Air Pollut. Control Ass., Aug. 1968, vol. 18, 564. (L)

Smokeless and odorless waste incineration units for commercial and institutional use are introduced by The Air Preheater Co., Inc., a subsidiary of Combustion Engineering. The factory-assembled Combustall waste incinerators are currently available in capacities from 200 to 1200 pounds per hour. Solid wastes are reduced to 1% ash in an enclosed hearth-type combustion chamber with a controlled forced air system. Smoke and fumes are consumed in a self-substaining afterburner section at the base of the stack.

A12533 02043; 02560, 02651, 03268, 03312, 03315, 03324, 03473

Akamatsu, I.

OZONE OXIDATION OF DIMETHYL SULPHIDE AND ODOUR REMOVAL FROM KRAFT PULP BLOW GAS. (In Japanese)

(CA)

Kami-Pa Gikyoshi 22(4), 200-4(1968). Generally, S compds. are malodorous in reduced form, but become odorless or irritant in oxidized form. The malodorous components in kraft pulp blow gas are MeSH, Me_2S, Me_2S_2, and H_2S, production of the last 2 being very low. In kraft pulping, generation of malodorous components is much more abundant for hardwoods than for softwoods. Me_2S is oxidized by ozone to Me_2SO (75%) and Me_2SO_2 (25%). During this oxidn., MeSH and other S compds. also change to mild or odorless, water-sol. compds. App. for odor removal from kraft pulp blow gas by ozone oxidn. is described.

7. Methods and equipment for abatement

A12534 02033, 02320, 02333, 02684, 03201, 02334, 05400

Anon.

U.S.S.R.: AFTERBURNERS FOR BUSES

Smokeless Air, Summer 1968, vol. 38, (146), 254. (L)

Exhaust purifiers which double as silencers have been fitted to 200 buses in Alma Ata in the province of Kazakhstan in Southern Russia.

The equipment takes the form of a meshed cylinder filled with a catalyst, which promotes burning of unburned fuel in the exhaust. A compressor feeds fresh air to the exhaust, upstream from the catalyst, which aids the burning of carbon monoxide, nitric oxide and the other dangerous products of combustion. It is claimed that at 20-28 m.p.h. (30-40 k.p.h.) 90 per cent of carbon monoxide in the exhaust is removed.

A12535 02030, 02478, 02613, 02773, 02790, 02849, 02997, 03653

Anon.

CONTRIBUTIONS TO CLEANER AIR - NEWS FROM INDUSTRY: NEW AIR POLLUTION CONTROL PLANT AT THAMES FOUNDRY

Smokeless Air, Summer 1968, vol. 38, (146), 277-278. (L)

A reduction of 97 per cent in the amount of solid matter emitted from one cupola of the five at the Ford Motor Company's Thames Foundry at Dagenham. A reduction from 600 lbs an hour of grit, dust and fumes emitted in a heavy reddish-brown cloud to 18 lbs an hour in a white plume from a 150 ft. stack. That is what has been achieved by a new air pollution control plant recently installed by Centri Spray Ltd., of Croydon. Tests already made show that this plant is very successful; Fords therefore intend that Centri Spray shall install two further plants, one serving each of the two remaining pairs of cupolas. When this has been done, and the hope is that the work will be completed before the end of 1968, the air round Dagenham should be very much cleaner..

The cupola to which the plant has been fitted is one of the largest in Europe; it smelts between 30 and 35 tons per hour and is used for the production of nodular iron.

A12536 02043, 02692, 02914, 03268, 03269, 03324, 02461

Arhippainen, B. and Westerberg, E.N.

KRAFT ODOUR CONTROL - ITS EFFECT ON MILL OPERATING PARAMETERS AND COSTS (APCA)

Pulp Paper Mag. Can. (Garborvale) 69 (8), 65-70 (Apr. 19, 1968).

Existing knowledge on kraft odor control is reviewed from a Scandinavian point of view. The ways a kraft odor control system may affect the mill environment and mill processing are briefly discussed. Little is known about the effect of the odor upon people, their psychology, and their attitudes. Furthermore, the performance of the recovery unit and the liquor oxidation system, if direct contact (DC) evaporation is used, are critical to the maintenance of low odor levels most of the time. The recovery boiler system with no DC evaporator, commonly used in Scandinavia, is discussed in some detail. Operating costs for this system are compared with those for a system with a DC evaporator, both with and without additional odor control equipment. For typical Finnish cost conditions, the system without the DC evaporator is slightly favored. Thus, with respect to odor control and costing, the recovery boiler system without DC evaporator may prove to be very competitive in many North American locations.

7. Methods and equipment for abatement

A12537 02614; 02143, 02490, 03593
Collectron Ltd.

DUST SCRUBBERS AND PARTICLE RECOVERY UNITS
Filtration & Separation, May-June 1968, vol. 5, 262-263. (L)

The new wet scrubber developed by Collectron Ltd., 175 Leckhampton Road, Cheltenham, Glos., is proving to be an effective and economical dust and fume scrubber for wide range of industrial applications involving small micron particles and when the pressure drop is required to be as low as 2 to 4 in. w.g. at ambient temperature. Recently a 4,000 c.f.m. plant has been installed at Revertex Ltd. to collect superfine asbestos dust.

The Collectron unit is based on a high efficiency cyclone incorporating a system for recycling any fine dust not deposited in the first passage through the cyclone. No filter bags or shaking mechanisms are required and the makers claim the capital costs can be as low as 5s. 6d. per cu. ft. of air handled.

A12538 02002, 02017, 02318, 02804, 03593; 03333
Drahorad, J.

ABSORPTION SOLUTION REMOVING CARBON DIOXIDE FROM GASES. (Patent)
(CA)

Czech. 124,191 (Cl. B 01*d*, C 01*c*), Sept. 15, 1967, Appl. Feb. 17, 1966; 2 pp. Polyalkyl- and polyarylsiloxanes, added in a 0.006–0.15% amt. to alk. scrubbing liquids, are excellent antioxidants and foam killers. Thus, the addn. of 100 g. polydimethylsiloxane (viscosity 200 cp.) to 1 $m.^3$ of an alk. scrubbing liquid, contg. 250 g. K_2CO_3/kg. soln., working at 16 atm. and ratio 12.8 l./$m.^3$, permitted an increase of the velocity of the gas feed from 0.082 to 0.101 m./sec. to obtain an equal scrubbing effect as without the addn. of the agent.

A12539 02030, 02638, 03727; 02399, 02416; 05820
Eastman Kodak Co.

A SIGNIFICANT ADVANCE: AIR POLLUTION CONTROLS TO BE INSTALLED
Air Engng, May 1968, vol. 10, 23. (L)

A SIGNIFICANT ADVANCE which will help insure cleaner air in the Rochester area was made recently when Eastman Kodak officials announced that air pollution controls would be installed in the two 366-foot stacks at Kodak Park. The controls are electrostatic precipitators designed to eliminate ash particles from the twin stacks. Officials at Eastman Kodak said the precipitators will remove more than 95 percent of the particles that are generated from burning coal.

7. Methods and equipment for abatement

A12540 02458, 02461, 02519, 02614, 02683, 02692, 02762, 02997, 03101, 03640, 03780

Gniewek-Grzybczyk, B.

FOAM-DUST SEPARATORS IN IRON ORE SINTERING PLANT. (In Polish) (APCA)

Wiadomosci Hutnicze (Listopad) 22 (11), 336-8 (1966).

The operation of six foam-dust separators (10,000 Nm^3/hr capacity) in the "Pokój" iron ore sintering plant was observed and critically evaluated over a 3-year period. Serious maintenance problems with these separators are partly attributed to poor design. For example, an undersize settling tank did not allow the smallest dust particles to settle so that they were carried away to clog grates. Dust also clogged drain funnels and sludge removal piping. Dust clinging unevenly to exhaust fan blades caused breakdowns every 2-3 weeks. SO_2 in the exhaust gases and in the dust caused sulfur corrosion throughout the entire installation and, despite anticorrosive coating, the fan housings had to be periodically welded. Furthermore, excessive water evaporation of up to 30% of the total inflow in certain seasons was detrimental to processing. Although this type of separator insures a better separation of dust from exhaust gases, operation is both expensive and time-consuming.

A12541 02043, 02638, 02760, 03443, 03700, 05820

Goodyear Tire & Rubber Co.

(AIR POLLUTION CONTROLS - EAST AKRON POWERHOUSE)

Air Engng, May 1968, vol. 10, 17. (L)

WHEN ALL of the Goodyear Tire & Rubber Co. air pollution controls —planned and in operation—go into action at the end of this year, they will be knocking out of the skies of East Akron an estimated 3,000 tons of soot and flyash a year. Air Pollution Control Chief Louis Bunts said the $100,000 electrostatic precipitator on Goodyear's new $1,300,000 boiler at the Plant II Powerhouse is already keeping 2,000 tons of particulate out of the air. An additional 1,000 tons will be kept out of the air by the company's latest plans to tear down five 50-year-old coal-fired boilers—which do not have air pollution controls—at the Plant I Powerhouse and replacing them with two new gas-fired furnaces. Goodyear is spending $650,000 on the new Plant I project, bringing to $2,050,000 its investment in cleaner air within a two-year period.

A12542 02168, 02425, 02614, 02625, 02722, 03537

Herrick, R.A.

THEORY, APPLICATION OF FILTER DRAG TO BAGHOUSE EVALUATION

Air Engng, May 1968, vol. 10, 18-21, 10 refs. (L)

The theory and application of the filter drag concept in fabric filtration analysis is discussed. Filter drag, the ratio of the pressure drop across the filter fabric to the gas velocity passing through the fabric, is presented as the fundamental parameter for engineering analysis of baghouse performance.

An example is described where filter drag is used to evaluate a single compartment of different style bags in a multi-section baghouse. This is only one of the many practical applications of this concept in the day to day operation of bag filters. Filter drag is analogous to electrical resistance or thermal conductivity and is generally applicable in the engineering analysis of the filtration of gases through fabrics.

7. Methods and equipment for abatement

A12543 02030, 02033, 02094, 02683; 02043; 02606, 02692, 02834; 03333
Imperial Chemical Industries Ltd. and Semmens, W.B.

TREATMENT OF EFFLUENT GASES. (Patent)
(CA)

Brit. 1,109,632 (Cl. B 01d), April 10, 1968, Appl. Aug. 17, 1964; 2 pp. Effluent gases contg. small concns. of finely divided solids, e.g. NH_4 and substituted NH_4 salts as may be discharged from a granulating or drying plant, are treated by feeding the gases to the inlet of a normally fuelled internal combustion engine, such as a gas turbine which provides axial flow of gases and can be operated in a conduit such as an effluent stack. The gas turbine may be operated so that the power generated is sufficient only to power its compressor or so as to create surplus power to be used to blow away its combustion product.

A12544 02002, 02015, 02022, 02094, 02683, 03063, 03312, 03532, 03777
Kawazoe, K.

REMOVAL OF SULPHUR DIOXIDE FROM FLUE GASES. (In Japanese)
(CA)

Seitan-Kenkyu 20(2), 65-9(1968). Various processes of SO_2 removal are discussed. These include wet and dry processes. The wet process is applicable to the small quantity of flue gases and the high concn. of SO_2. NH_4OH was studied for its absorption and reaction of SO_2 in order to recover $(NH_4)_2SO_4$ for fertilizer use. Lime soln. was also used to remove SO_2 as $CaSO_4$. The dry process includes adsorption (activated C method, etc.) absorption (Mn and alumina methods), and catalytic oxidn. type (V method). The adsorption of SO_2 on activated C was a function of SO_2 partial pressure and temp. The presence of H_2O and O can greatly induce the SO_2 adsorption on activated C.

A12545 02035, 02613, 02625, 02638, 02799, 03331
Koglin, W.

LOAD DEPENDENCE OF ELECTROSTATIC PRECIPITATORS. (DIE LASTABHÄNGIGKEIT VON ELEKTROFILTERANLAGEN). (In German; English summary)
Staub, Oct. 1968, vol. 28, 398-402, 9 refs. (L)

Extensive investigations into the problem of characteristics of electroprecipitators have given the following results: 1. The turbulence in an electroprecipitator is so high that no selective separation occurs depending on particle size diameter. 2. The 'apparent' migration velocity in a given system depends on gas velocity. 3. The 'apparent' migration velocity does not depend on dust content of untreated gas, but it certainly depends on the average particle diameter. It is, however, possible that in the case of wet electroprecipitators coagulations occur as a function of dust content of untreated gas.

A12546 02509, 02625, 02638, 03819
Liesegang, D.

EFFECT OF GAS TEMPERATURE ON PERFORMANCE AND DESIGN OF ELECTROPRECIPITATORS. (DER EINFLUSS DER GASWÄRME AUF DIE LEISTUNG UND DIE KONSTRUKTION VON ELEKTROFILTER-ANLAGEN). (In German; English summary)
Staub, Oct. 1968, vol. 28, 403-405. (L)

First discusses the relationship between electric resistance and gas temperature, and its effects on separation efficiency of electroprecipitators. This is followed by a discussion of the influence of gas heat on discharge electrodes and collecting electrodes, on rapping devices and insulators. Finally, information is given with regard to a suitable arrangement of filter installations to avoid minimum performance of an electroprecipitator depending on temperature.

7. Methods and equipment for abatement

A12547 02043, 02964, 05140; 03777; 02045, 03471; 05130; 03519, 03728, 05270; 02914, 02975, 02988, 03727, 05500; 02416, 02960, 03443, 03526, 05180; 02342, 02638, 05380; 05370

Lund, H.F.

AN EVALUATION OF EUROPEAN INDUSTRIAL AIR POLLUTION CONTROL PRACTICE

J. Air Pollut. Control Ass., Sept. 1968, vol. 18, 586-589, 5 refs. (L)

Reports impressions gained during a tour of six countries (Netherlands, Denmark, Sweden, Switzerland, West Germany, and England) which took place in October 1967 under the sponsorship of the American Institute of Plant Engineers The use of inspection and persuasion, rather than the pressure of public opinion (as in the U.S.) to achieve the desired objective in the U.K. is commented on. Other points are, the current concept in the U.K. to use chimneys to push SO_2 through the inversion layer, and the belief, held by English experts, that SO_2 is not injurious to health; the use of electrostatic precipitators to eliminate cement dust from the Swiss countryside; a 700-feet high stack dispersing SO_2 from a Shell refinery in the Netherlands; and the use of municipal waste incinerators in West Germany for turning the heat generated by the incinerator into electric power.

A12548 02614, 02638, 02683, 02722, 03333

Merckle, K.E. and Dungler, J.

FILTRATION OF FLUE GAS. (Patent)

(CA)

U.S. 3,375,638 (Cl 55-116), April 2, 1968; Fr. Appl. Aug. 29, 1962; 3 pp. Gas permeable movable filters mounted on a belt are interposed transversely to the gas current; they are elec. charged when in the filtering position and as the belt revolves are moved into a cleaning position where the charge is removed. The app. operates continuously in a sealed chamber in which a succession of such belts can be placed. The elec. charge is passed to the filter member from fixed backing members, the polarity of which can be reversed in successive filters. Cleaning of the filtered dust or particles from the screen is done by blowing or suction.

A12549 02043; 02036, 02386, 02695, 03478, 03754, 03967; 02638; 03333

Messen-Jaschin, C.A.

INSTALLATIONS FOR PURIFYING AIR IN THE STREETS OF LARGE TOWNS

British Patent 1,126,401, 5 Sept. 1968 (Application: Switzerland, 29 Apr. 1965) (L)

An installation for purifying air in the streets of a large town provided with an underground surface water drainage system comprises a number of extraction fans (or other forced ventilation devices) located in the main channel of the drainage system; each extraction fan being positioned immediately upstream of a respective air trap in the main channel. Devices for passing the extracted air to the main channel or to the open air are associated with each extraction fan. Electrostatic filtering devices are preferably provided behind each ventilator for purifying the withdrawn air before it reaches the open air.

A12550 02030, 02057, 02722, 03417, 03600, 03876, 03898, 03959, 03962, 05930

Neuberger, H., Hosler, C.L. and Kocmond, W.C.

VEGETATION AS AEROSOL FILTER

Biometeorology, vol. 2, part 2, p. 693-702, 14 refs., (Proceedings of the Third International Biometeorological Congress, 1-7 Sept. 1963), Pergamon Press, Oxford (etc.), 1967

Measurements of ragweed-pollen concentrations inside and outside a forested area during two seasons revealed that 100 m inside a dense coniferous forest more than 80 per cent of the pollen is removed from the air; deciduous trees seem somewhat less effective in this respect. Laboratory determinations of the filtering effect of coniferous and deciduous plant material on Aitken nuclei showed the coniferous material to remove on the average 34 per cent (477 measurements), deciduous material 19 per cent (348 measurements) of the submicroscopic particulate matter from the air.

7. Methods and equipment for abatement

A12551 02614, 02625, 02638, 02681, 02760, 03443, 03775, 03780; 02094, 02971

Reese, J.T. and Greco, J.

EXPERIENCE WITH ELECTROSTATIC FLY-ASH COLLECTION EQUIPMENT SERVING STEAM-ELECTRIC GENERATING PLANTS

J. Air Pollut. Control Ass., Aug. 1968, vol. 18, 523-528, 8 refs. (L)

Exit gas temperature, sulfur in the fuel, and acid dewpoint are interrelated variables which exert pronounced effects on electrostatic fly-ash collectors.

When operating with flue gas at temperatures above the acid dewpoint, collector efficiency declines as sulfur in the fuel decreases below about 2.0%. When operating with flue gas at temperatures below the acid dewpoint, performance is sharply reduced by trace amounts (1-2 ppm) of condensed sulfuric acid.

(contd)

The exact mechanism by which condensed H_2SO_4 in flue gas affects precipitator performance is not known; however, test results indicate that the acid may condense in such a manner to alter electrical properties of the flue gas or fly ash.

For those units which are designed to operate below the acid dewpoint, collector performance is restored to acceptable levels by operating with elevated gas temperatures. Unfortunately, the loss in boiler efficiency makes the economics of this approach unattractive.

A12551 (contd)

Collector performance can also be restored on units operated below acid dewpoint by the addition of small quantities (5-15 ppm) of ammonia to the flue gas. The economics of this method are more favorable than other remedial measures considered

A12552 02683, 02804, 02934, 03593

Romovacek, J. and Benes, M.

REMOVAL OF HYDROGEN SULPHIDE FROM GAS BY ARSENIC WASH SOLUTIONS. (In German)

(CA)

Sb. Vys. Sk. Chem.-Technol. Pross, Technol. Paliv No. 14, 83-71(1967). The conditions for a continual removal of H_2S from industrial gases were studied. The procedure used was based on the selective washing of H_2S from gas with a wash liq. contg. arsenate, in the course of which the redn. of As(V) to As(III) proceeds, and the H_2S washed out was converted to elemental S. The wash liq. was regenerated by air injection. Testing on a lab. scale proved this procedure to be suitable for selective desulfurization of gases of different compn. and different H_2S concn.: carbonization gases, acid expansion gases from the Lurgi plant, and out-gases from the manuf. of viscose fibers. For studying the mechanism of H_2S removal suitable anal. methods were developed and tested. The anal. of the wash liqs. showed that the mechanism of H_2S removal by As wash liqs. could be considered as a modification of the well-known Thylox procedure. Between the Thylox and Giammarco-Vetrocoke procedures there is no principal difference in the chemism of the reactions involved. The wash liqs. contain in both cases the compds. of As(V) as well as As(III). 42 references.

A12553 02036, 02804, 03098, 03312, 03532, 03593, 03777, 03780; 03333

Ruhrchemie A.G. and Rottig, W.

REMOVAL OF SULPHUR OXIDE FROM GASES. (Patent)

(CA)

Ger. 1,261,113 (21. B 01d, Feb. 15, 1968, Appl. March 13, 1962; 10 pp. The removal of SO_2-SO_3 mixts. from gases was done by passing them through aq. dispersions of alk. Mg compds. with the formation of $MgSO_4$. The dispersions consisted of MgO, $Mg(OH)_2$, $Mg(HCO_3)_2$, and $MgCO_3$. The reaction was intensified by addn. of oxidizing salts and (or) gases, preferably air.

7. Methods and equipment for abatement

A12554 02333, 03271, 03775

Shiba, T.

THE CURRENT STATUS OF HEAVY-OIL DESULPHURIZATION TECHNOLOGY. (In Japanese) (APCA)

[*J. Japan Petroleum Institute*]
Sekiyu Gakkai Shi (Tokyo) 10 (7), 416–20 (July 1967).

Desulfurization of crude oil and heavy petroleum residues is reviewed. Numerous types of sulfur compounds contained in the residue of heavy petroleum distillation and their reactions are discussed in terms of the hydrogen consumption for desulfurization of the residue. Representative catalysts proposed for desulfurization by hydrogenation are tabulated. Vanadium will reduce the activation rate of catalysts. Selection of the most effective catalysts for a given oil or residue depends on the desulfurization process employed. Six commercial desulfurization processes are illustrated and explained.

A12555 02333, 02683, 02804, 03478; 03333

Schilde A.G. and Becht, H.

CATALYTIC PURIFICATION OF WASTE GASES. (Patent) (CA)

Ger. 1,264,865 (Cl. F 01n), March 28, 1968, Appl. Sept. 3, 1964; 1 p. The gases pass through tubes or towers with recesses in their walls corresponding to the size of the formed catalyst. The contact of the gas with catalyst and heat-exchanging wall was improved.

A12556 02425, 02509, 02625, 02638, 02722, 03735

Schröter, K.

FIXING AND DETERMINING A GUARANTEED DEGREE OF SEPARATING EFFICIENCY OF AN ELECTROPRECIPITATOR BY MEANS OF MATHEMATICAL STATISTICS. (GARANTIEFESTLEGUNG UND GARANTIENACHWEIS FÜR DEN ABSCHEIDEGRAD VON ELEKTROFILTERN MIT HILFE DER MATHEMATISCHEN STATISTIK). (In German; English summary)
Staub, Oct. 1968, vol. 28, 395–398, 2 refs. (L)

The author describes a new method for designing electroprecipitators with the help of statistics. This is explained by the example of flue gas precipitators used for a steam boiler with coal dust firing and with dry ash removal. The method is also suitable for all other types of electroprecipitators.

A12557 02015, 02022, 02320, 02333, 03177, 03243, 03627, 04026; 02614

Shkolnikova, R.I. and Baikeev, R.K.

DEVELOPMENT OF A METHOD FOR THE COMPLEX REMOVAL OF DUST AND NOXIOUS GASES, FORMED DURING BLASTING FROM FIREDAMP. (In Russian) (CA)

Bor'ba Silikozom, Akad. Nauk SSSR, Sb. Statei 7, 113–10(1967). The method of catalytic adsorption was used in the removal of CO from mine air, by using a siccative as an adsorber of water vapors and hopcalite as catalyst for the oxidn. of CO. A comparative study of synthetic zeolites 4A, granulated silica gels KSM and SHSM, and hopcalite 60% MnO_2 + 40% CuO was carried out with various filtration rates of air current and various contact times of the air with the adsorbers; the results confirm the possibility of using siccatives with an air-current rate of 0.3 m./sec. The best results in absorbing capacity and hydraulic resistance were shown by zeolites. With the initial concn. of CO of 0.15% and filtration rate of 0.3 m./sec. hopcalite worked continually 80 min. with the siccative, but only 15 min. without it. Regeneration was carried out by annealing of zeolites and hopcalite at 150° for 30–40 min. Synthetic zeolites, silica gels, and active charcoal were studied in the removal of the mixt. of N oxides (consisting of 10% of NO_2

(contd)

7. Methods and equipment for abatement

A12557 (contd)

and 90% of N_2O_4), formed during blasting. Satisfactory results were achieved only at filtration rates below 0.05 m./sec. Further investigations were carried out with chem. adsorbers at air-gas current rates of 0.3-0.4 m./sec. Final expts. were carried out in plant conditions with the use of siccative (wt. 5 kg., layer height 0.20 m.), hopcalite (wt. 3.5 kg., layer height 0.1 m.) and a chem. adsorber (KHP1) (wt. 4.0 kg., layer height 0.20 m. in the 1st 7 expts., 2.0 kg., and 0.1 m., resp., in the 8 following ones). The content of CO at the exit from the app. was 0.001-0.003%, that of N oxides 0.0001% (on N_2O_4 basis). In the industrial design of the plant the following parameters are recommended: air-gas rate 0.4 m./sec.; its contact time with the siccative 0.5 sec.; with hopcalite 0.25 sec.; with chem. adsorber 0.25 sec., regeneration temp. for siccative and hopcalite 150°.

A12558 02333, 02804, 03312, 03593; 02326, 03532; 03333
Sicha, V., Matys, J. and Snabl, J.
REMOVING METAL CARBONYLS FROM GASES. (Patent)
(CA)
Czech. 124,215
(Cl. C 10k), Sept. 15, 1967, Appl. April 21, 1966; 2 pp. Scrubbing gas with higher-b. org. compds. (b. 100-450°) in the presence of an oxidn. catalyst is more efficient and economical than the usual adsorption processes. Thus, a gas contg. 200 mg./m.³ $Ni(CO)_4$, 20 mg./m.³ $Fe(CO)_5$, and 0.5 vol. % O was scrubbed in a 10-plate column with triethylene glycol, contg. 0.1 wt. % V_2O_5 and KOH to pH 8. The purified gas contained 0.05 mg./m.³ $Ni(CO)_4$ and <0.01 mg./m.³ $Fe(CO)_5$.

A12559 02030, 02722, 02739, 03123, 03427
Spurny, K.
MEMBRANE FILTERS IN THE STUDY OF AEROSOLS: 1. THE STRUCTURE OF MEMBRANE FILTERS.
(FA).
Zentbl. Aerosol-Forsch., 12, (5), 369-406, (Sept. 1965). This report deals with filters, filtration, ultrafilters and ultrafiltration; the preparation of cellulose nitrate membrane filters; the structure of membrane filters under the headings porosity and its determination, pore size and the determination of pore dispersion, membrane filter models; and finally, gas flow through the porous medium of a membrane filter.

A12560 02030, 02722, 03123
Spurny, K.
MEMBRANE FILTERS IN THE STUDY OF AEROSOLS: 2. THE MECHANISM OF FILTRATION IN MEMBRANE FILTERS.
(FA).
Zentbl. Aerosol-Forsch., 12, (6), 530-545, (Dec. 1965). The paper deals with the basis of filtration theory in aerodisperse systems, filtration properties of a membrane filter, kinetics of aerosol filtration by means of membrane filters, and methods of experimental investigation of the filtration properties of membrane filters.

A12561 02030, 02461, 02614, 02638, 03331, 03593; 02390
Stairmand, C.J.
SOME INDUSTRIAL PROBLEMS OF AEROSOL POLLUTION
Proc. Roy. Soc. A, 29 Oct. 1968, vol. 307, 209-214, 4 refs. (L)

This paper is concerned mainly with the technical problems of reducing emissions of the finer particles, and these can only be removed effectively at great expense, either because the required equipment is large and costly as, for example, the electrofilters, or because high-energy consumption is involved, as in the venturi-scrubber.

7. Methods and equipment for abatement

A12562 02320, 02333, 02543, 02682, 02684, 02921, 02952, 03201, 03312, 03359; 03333

Universal Oil Products Co. and Bloch, H.S.

VARIABLE DENSITY ACTIVATOR OXIDATION CATALYST. (Patent)

(CA) U.S. 3,377,269

(Cl. 208-466), April 9, 1968, Appl. June 15, 1964; 6 pp. Small plastic particles contg. a thermally decomposable Pt compd. are commingled with an Al_2O_3 hydrosol. The resultant mixt. is gelled to form Al_2O_3 hydrogel particles much larger than the original. The hydrogel particles are dried, impregnated with an aq. Pt soln. and calcined to yield Pt/Al_2O_3 particles whose surfaces contain a no. of localized spots of relatively high Pt d. in a matrix of low Pt concn. Alternatively, the activator may be another member of the Pt group, V, Cr, Mn, Mo, W, a member of the Fe group, Cu, Ag, or Co. The high-d. sites may consist of one activator or a mixt. of activators. Moreover, the low-d. sites may consist of a dissimilar metal. The catalyst was tested under various automotive engine operating conditions such as cyclic (variable traffic), steady idling, steady 30 mph. cruise, and steady 60 mph. cruise. The latter 2 yield high-temp. (>400°F.) exhaust gases. As listed for 4 operating conditions, the % conversions of hydrocarbons and CO

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A12562 (contd)

were respectively 89 and 79, 73 and 75, 97 and 97, and 87 and 88. Atm. pollution by exhaust gases from diesel, butane, and natural gas engines, waste material from large internal combustion engines and industrial exhaust fumes can be rendered less harmful with this invention.

(Abbreviated abstract)

A12563 02030, 02035, 03331, 03607

Wessel, J. and Hermann, J.

STUDIES ON THE PRODUCTION OF NARROW PARTICLE-SIZE FRACTIONS BY AIR SEPARATORS. (VERSUCHE ZUR HERSTELLUNG SCHMALER KORNBANDER DURCH WINDSICHTUNG). (In German; English summary)

Staub, Oct. 1968, vol. 28, 406-409, 9 refs. (L)

By using suitable air separators it is possible, without intricate arrangements, to divide a particle size into many relatively sharply defined fractions. It is expendient in this case to start the separation in the fine particle range. The fractions obtained are within the following ranges: 15–40, 40—70, 70—100, 100—150 and 150—250 μm. They differ considerably from the original particle size as regards the falling capacity, bulk density and tendency to agglomeration.

A12564 03519, 03775, 05250

Yasuo, M. and Watkins, C.H.

DIRECT DESULPHURIZATION OF RESID CURBS AIR POLLUTION (APCA)

Oil and Gas J. 66 (21), 126–30 (May 20, 1968).

A 40,000 bpsd reduced crude desulfurization unit (RCD Isomax Process) has been installed in a refinery at Chiba, Japan. This unit, which is the first large-scale plant of its kind in the world reduces the sulfur content of Kuwait reduced crude from 3.9 to 1.0% by weight. At the same time that low-sulfur fuels are produced, RCD Isomax also makes it possible to convert potential noxious air pollutants into the raw materials for chemical manufacturing and fertilizer production. An analysis of the economics demonstrates that RCD Isomax desulfurization of heavy fuels for industry is feasible.

See also: A 12402, A 12404, A 12405, A 12412, A 12414, A 12416, A 12422, A 12454, A 12465, A 12469, A 12471, A 12519

8. Miscellaneous

A12565 02386, 02960, 02977
Basden, K.S.
INCINERATOR INSTRUMENTATION SYSTEMS
(APCA)

Clean Air 2 (1), 18-22 (Mar. 1968).
The purposes of instrumentation of a modern high-temperature municipal incinerator are discussed, together with a brief description of some categories of instruments with which such a plant would be equipped. This paper also introduces the subject of automatic control of incinerator plant, and mentions particular applications which would be economically feasible on a modern incinerator installation.

A12566 02271, 04009, 04012
Pickles, A.T.
WHITEHALL STAKE IN RESEARCH
The Times, 12 Nov. 1968, Building at Home and Abroad Supplement, p. II. (L)

Brief feature article, giving an account of the scope of research work performed at the Building Research Station at Garston, Hertfordshire, which includes the use of models in a wind tunnel to study airflow near buildings.

A12567 02030, 02637, 02638; 02214
Weinberg, F.J.
ELECTRICAL ASPECTS OF AEROSOL FORMATION AND CONTROL
Proc. Roy. Soc. A, 29 Oct. 1968, vol. 307, 195-208, 41 refs. (L)

Because aerosols usually are charged, or can be induced to acquire charge, a wide measure of electrical control over their formation and behaviour is possible. They can be dispersed and guided by means of applied fields and caused to deposit in particular forms and desired places. Control of residence times and trajectories of particles formed in reaction zones allows the size and amount to be varied within wide limits. Recent results on 'nucleation' by charged particles suggest that there may be the further possibility of exercising control over a reaction by guidance of the charged centres on which reaction can proceed.