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Protecting Parks and Wilderness  
From Nearby Air Pollution Sources



Statement of  
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Before the Environment, Energy, and  
Natural Resources Subcommittee  
Committee on Government Operations  
House of Representatives

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Mr. Chairman and Members of the Subcommittee:

I appreciate the opportunity to be here today to discuss our findings on federal and state efforts to maintain clean air in national parks and wilderness areas.<sup>1</sup> Our work, as you know, focused on the Prevention of Significant Deterioration, or PSD, program authorized by the Clean Air Act Amendments of 1977. Under the PSD program, major new stationary sources of air pollution, such as factories or power plants, must install strict emission controls if they are located near any of the 158 national parks or wilderness areas designated by the amendments. The states issuing construction permits for these facilities must also forward the permit applications to the responsible federal land management agencies. These agencies are supposed to review the applications and determine whether the proposed facilities would adversely affect the parks or wilderness areas.

You asked us to examine several aspects of the PSD program; let me briefly summarize our findings:

-- First, the stationary air pollution sources that are regulated under the PSD program comprise a very small portion-- about 1 percent--of the sources near the five parks and wilderness areas we examined. The remaining 99 percent are exempt from PSD

<sup>1</sup> See Air Pollution: Protecting Parks and Wilderness From Nearby Pollution Sources (GAO/RCED-90-10, Feb. 7, 1990).

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permit requirements, either because they were grandfathered or were considered minor sources under the act.

-- Second, in looking at how federal land managers have carried out their PSD permit application review responsibilities, we found that the review process has not been well implemented.

-- Lastly, although additional park and wilderness areas have been recommended for special protection from new air pollution sources, states have not designated any additional areas. States cited a variety of reasons, including the belief that these areas are already amply protected and a concern that additional protection would hamper state economic development.

#### BACKGROUND

Before I elaborate on these findings, I would like first to provide some background on the PSD program--what it was meant to do and how it was meant to work. The PSD program was authorized, in part, to ensure that new development would not cause any significant deterioration of air quality in relatively clean air areas. Although the Clean Air Act established minimum air quality standards for the entire country, the PSD program went beyond this to maintain the quality of air that was already cleaner than required by the standards.

The act gave the highest level of protection to 158 national parks and wilderness areas, designating them Class I areas. These areas included the national parks of over 6,000 acres, national wilderness areas and memorial parks of over 5,000 acres, and the international parks that were in existence in 1977, when the amendments were enacted. All other areas in the United States that did not exceed national air quality standards were designated Class II, but the Congress gave the states and Indian tribes authority to redesignate any of these Class II areas to Class I.

The amendments set certain tests that must be met before a major new source of pollution could be built near a Class I area. To receive a construction permit, the owner or operator of a proposed facility must demonstrate to the state regulatory authority that it will meet the required emission standards and that it will employ the best available control technology. The state agency is then required to forward permit applications to the Environmental Protection Agency (EPA). For facilities proposed within 100 kilometers, or about 60 miles, of Class I areas, EPA must notify the responsible federal land management agency. These agencies--the National Park Service, the U.S. Fish and Wildlife Service, and the U.S. Forest Service--are then required to review the applications. If they find, and can demonstrate to the state, that the proposed facilities would adversely affect Class I areas, then the permits cannot be issued.

FEW SOURCES NEAR CLASS I AREAS  
ARE SUBJECT TO PSD PERMIT REQUIREMENTS

Let me return now to what we learned from our review. First of all, as I mentioned a moment ago, PSD permit requirements cover very few sources of air pollution around Class I areas. We selected five Class I areas around the country for study: Rocky Mountain National Park and Flat Tops Wilderness in Colorado, Shenandoah National Park and James River Face Wilderness in Virginia, and Cape Romain Wilderness in South Carolina. Altogether, more than 2,330 stationary sources were operating within 100 kilometers of these 5 areas at the time of our review. Yet only 27 of these sources--1 percent--were required to have PSD permits. The remaining 2,300 or so sources did not have to obtain PSD permits, either because they were major sources that had been built before 1977 and were therefore grandfathered or because they emit less than 250 tons a year of air pollutants regulated under the act (or in some cases, 100 tons a year) and were therefore considered minor sources under the act.

Collectively, these exempt sources, particularly those that were grandfathered, account for up to 90 percent of five pollutants emitted around these areas. (See fig. I.1 in attachment I.) These five--sulfur dioxide, nitrogen oxides, carbon monoxide, particulates, and ozone--are pollutants for which EPA has set national standards under the Clean Air Act.

Around Shenandoah National Park, for example, where ozone levels in 1988 exceeded national standards, sources exempt from PSD permit requirements contributed 95 percent of the volatile organic compounds and 83 percent of the nitrogen oxides--two substances that are precursors to ozone formation--emitted near the park. (See fig. I.2.) Grandfathered sources accounted for most of these emissions.

In some cases, minor sources also contributed significant portions of total emissions around the Class I areas we examined. Although their share of total emissions was generally small, minor sources nevertheless accounted for 60 percent or more of the particulates emitted around Rocky Mountain National Park and Flat Tops Wilderness, as well as 64 percent of the volatile organic compounds emitted around Flat Tops. (See figs. I.3 and I.4.) This is not a situation unique to Class I areas, I might add. In its proposed post-1987 ozone policy, EPA reported that a significant portion of total emissions of volatile organic compounds generally comes from small sources. EPA therefore suggested that states consider lowering thresholds for regulating new sources to 25 tons a year--considerably less than the current PSD threshold.

Although we have a fairly complete picture of the proportions of pollutants emitted by both PSD-permitted and exempt facilities, we know far less about the extent to which these nearby sources

account for the air pollution that actually enters these Class I areas. Park Service information indicates that, under certain meteorological conditions, nearby sources can account for the major portion of pollutants that reach Class I areas. In Shenandoah and in Mammoth Cave National Park (Kentucky), the Park Service estimates that from 60 to 80 percent of sulfur dioxide emissions that enter the parks come from local sources. More recently, the Park Service has been able to trace visibility problems in Grand Canyon National Park to a nearby coal-burning power plant. The agency has estimated that, at times, the power plant has contributed from 60 to 78 percent of the sulfur in the park, which, in the form of sulfates, is largely responsible for impaired visibility.

Along with pollutants from nearby sources, some portion of pollutants that reach Class I areas are carried through the atmosphere from long-distance sources. The Park Service has estimated that high proportions of the airborne sulfates within four national parks in the eastern United States, including Shenandoah, Great Smoky, and Mammoth Cave, result from emissions quite distant from the parks, in some cases, more than 250 kilometers.

If nearby exempt sources are causing air pollution problems in Class I areas, what can be done about it? The Clean Air Act currently provides for the installation of retrofit technology on



certain grandfathered sources. This is the provision--section 169A--under which EPA could require a power plant near the Grand Canyon to install additional pollution controls. But this provision applies only in cases in which visibility in Class I areas is adversely affected. We would like to point out, however, that as far back as 1981, a National Academy of Sciences study found that visibility was not the only air problem affecting Class I areas. The Academy therefore suggested that additional controls on both existing and minor sources might be necessary to correct acid rain and protect other air quality-related values.

Given the consistent pattern of exempt and permitted sources among the five Class I areas we looked at, we feel fairly confident that a similar proportion of exempt and PSD-permitted sources would be found elsewhere. But because we looked at only 5 out of 158 areas, we obviously cannot say this with certainty. More importantly, we have no information at all on the extent to which nearby sources contribute to air pollution in Class I areas other than Shenandoah, Mammoth Cave, and the Grand Canyon.

Considering what we do know, however, we believe that it would be worthwhile for EPA to examine a broader group of Class I areas, both to determine the extent to which exempt sources are contributing to emissions and the extent to which air quality in these areas is affected by these emissions. Depending on the outcome of these studies, the Congress might want to consider

revising the Clean Air Act to lower the threshold for minor sources of emissions or to require installation of additional controls on grandfathered major emission sources. We believe that with data on emissions maintained by state air quality offices and with currently available atmospheric monitoring and modeling capabilities, such a survey could be completed relatively quickly.

PERMIT REVIEW PROCESS IMPROVED  
BUT STILL HAMPERED BY LACK OF DATA

The second major area covered in our review had to do with the PSD process and how effective federal land managers have been in the review of PSD permit applications. Put simply, in its first 10 years, the PSD permit review process was not well implemented. EPA regions did not always forward all the applications to federal land managers; and the land managers, with the exception of the Park Service, did not always have the staff or time to review the applications they did receive. Most of these problems, however, appear to have been addressed and improvements are either underway or planned.

Permit Review Process Improving

Let me return to the issue of forwarding PSD permit applications to land managers. Within the small group of PSD permits issued near the five Class I areas in our review, we found

that federal land managers had received the applications for fewer than half (12 out of 27). EPA reviews also found no record that land managers had been notified of about 50 percent of the permits involving construction within 100 kilometers of Class I areas. EPA has not been unmindful of this problem, however, and has attempted to correct it through the use of a checklist that it transmitted to its regions in May 1989. Intended to help regional office reviewers ensure that states have properly handled PSD permit applications, the checklist includes an item that has to do with whether federal land managers have been notified when the application is near a Class I area.

Even when they received applications, federal land managers did not always review them and provide comments to the permitting agencies. Of the total 392 permit applications that were forwarded to land managers between August 1977, when the program began, and August 1987, comments were provided on 261, or two-thirds. (See table I.1.) Land managers told us that they were not able to provide comments on the remaining applications because, in some cases, they did not get them until 30 to 60 days before the permits were issued, which they felt was not enough time for a review of emission impacts. Here too, EPA is aware of the problem. The agency has had a policy in effect since 1979 that its regions notify land managers of applications as soon as they are received. Recognizing that this policy has not always been followed, EPA

plans to hold training courses, beginning this fiscal year, that will emphasize the need for timely notification.

Federal land managers also did not respond with comments because they did not, in all cases, have the staff to review permit applications. The Fish and Wildlife Service, for example, did not have any staff assigned to permit application review between November 1982 and the end of 1984. Since 1985, however, it has had two full-time staff assigned. The Forest Service has also devoted more staff to reviewing applications.

On the whole, the Park Service has had a better record in reviewing and commenting on permit applications than the other agencies, reviewing 82 percent of the applications it received and making recommendations to the permitting authority in more than two-thirds of the cases it reviewed. By contrast, the Forest Service recommended changes to only 17 percent of the applications it reviewed. We cannot say what the outcome of these reviews was, however, because the agencies were not always informed by the permitting agencies about the disposition of their recommendations. The Park Service, for example, was not aware of how the permitting authority had handled about 44 percent of the applications on which it had made recommendations. Moreover, even in those cases in which land managers' recommendations were adopted, it is not clear if changes were made because of the land manager review or if the

permitting agencies would have required the changes independently of the land manager review.

Insufficient Data About Resources and Effects of Pollutants

Despite EPA efforts to improve certain aspects of the permit review process, land managers continue to be hampered by a lack of sufficient information about the resources they are trying to protect and the effects of air pollution on those resources. Once they receive a PSD permit application, land managers are responsible for determining whether anticipated emissions will have an adverse impact on the air quality-related values of the Class I area. These values are the scenic, cultural, biological, recreational, and other resources, including visibility, that may be affected by changes in air quality. If the land manager demonstrates to the permitting agency that the proposed facility will adversely affect these values, the facility may not be built.

In order to evaluate whether a proposed facility will adversely affect air quality-related values, land managers believe they need to know what these values or resources are, the current condition of those resources, the effect of anticipated pollution levels on resources, and whether these effects are adverse. Land managers believe that the burden of proof rests with them, that they must demonstrate to the permitting authority that the emissions from a proposed source will have an adverse impact on

air quality-related values. However, they feel that they do not now have enough information to adequately determine adverse impacts in all cases.

The Park Service, alone among the land management agencies, has been actively gathering information for a number of years. Nevertheless, agency officials believe that the Park Service still lacks enough information to determine, in all cases, whether a proposed facility will have an adverse impact on park resources. This is particularly true in cases involving ozone, where it is difficult to establish a source-receptor relationship because ozone is not directly emitted. It has also been difficult to determine precisely what constitutes an adverse impact--whether spots on leaves can be considered an adverse impact or whether some more drastic effect, like a change in an entire ecosystem, must be demonstrated. Park Service officials acknowledge that their standards for information are highly rigorous, based on their belief that any adverse impact determination might be legally challenged and would consequently have to be based on very certain information.

By contrast, the Forest Service and the Fish and Wildlife Service have collected far less information and have had much smaller research programs. The Fish and Wildlife Service, for example, does not have a complete inventory of air quality-related values in any of its Class I areas and has studied causes and

effects of air pollution in only 3 of its 21 Class I areas. According to agency officials, only one Class I area has been characterized well enough to provide an adequate basis for approving or denying PSD permit applications, and only in terms of visibility. The agency has provided only a very small portion--\$25,000 out of an estimated \$10.5 million--of the funds that its air program staff believe is necessary to provide adequate information. According to an air program official, the Fish and Wildlife Service has given higher priority to other data needs--relating to groundwater contamination, for one--and refuge managers have requested funding for studies only if they perceive air pollution to be a problem.

Until recently, the Forest Service also devoted little effort to its air resource management program. As of 1987, none of its Class I areas had been completely inventoried, and none had been adequately characterized for the purposes of reviewing Class I permit applications. Lacking this information, the Forest Service found that permit applications were handled inconsistently, with regional foresters sometimes recommending approval of an application because of inadequate information and in other regions recommending denial for the same reason. However, the agency now has plans for a 10-year data-gathering and research program for which it has requested over \$18 million.

STATES HAVE DESIGNATED

NO NEW CLASS I AREAS

On the question of designating new Class I areas, we found that although states have the authority to do so, they have not designated any new Class I areas in addition to those established by the Clean Air Act Amendments. This has not been for lack of suitable areas. In 1979 and 1980, the Forest Service and the Interior Department, as directed by the act, reviewed 110 areas and recommended 59 for redesignation, on the basis of the presence of air quality-related values. In addition to these 59 eligible areas, over 260 national parks and wilderness areas have been created since 1977 that meet the original acreage criteria for Class I areas.

To find out why the states did not act to redesignate any of these eligible areas, we interviewed air program officials in the 14 states and territories in which the 59 recommended areas are located: Alaska, Arizona, California, Colorado, Florida, Idaho, Montana, Nevada, New Mexico, Oregon, South Dakota, Utah, Wyoming, and the Virgin Islands. We found a variety of reasons. One that officials often cited was a lack of resources or expertise to perform the redesignation studies required by the Clean Air Act; in some cases, states believed they were not responsible for conducting these studies. Although the act does not state who should conduct these studies, it requires an analysis of the



health, environmental, economic, social, and energy effects of redesignation; and it requires that public hearings be held before the states can redesignate any area.

In other cases, state officials claimed that redesignation had not occurred because the state's air quality program already adequately protected the recommended areas; this was reported by Alaska, Montana, Nevada, and New Mexico. Some state officials also believed that the PSD program was not the most effective way to deal with air quality problems. In Colorado, for example, an air program official said that the state believes that the PSD program is not adequate to deal with regional haze and acid deposition, two of the state's biggest air pollution problems, and it has not put much effort into redesignation. Arizona also believes that the PSD program is not adequate to solve air quality problems in the state's clean air areas, which come from sources that are exempt from regulation, including grandfathered and minor sources.

In other cases, state officials did not pursue redesignation because of concerns about the effects on economic development in the surrounding areas. In Utah, for example, which has seven areas that were recommended for redesignation, state air program officials said that the state dropped further plans after they were met with intense opposition from industry and elected officials during public hearings on redesignating one of the areas.

In a couple of states, officials told us that they had not pursued redesignation, in part, because federal land managers had not been more aggressive in recommending redesignation. Florida's air program official, for example, said that the state had given redesignation a low priority because the Park Service had not pressed the state. The Alaska air program official said that in his view, the federal land manager would have to actually recommend redesignation and conduct the necessary studies before the state would proceed. Neither Interior nor the Forest Service has taken an active role in redesignation, however, having chosen not to encourage the process.

In our view, the absence of state designations is not surprising. Without some sort of federal initiative or requirement, it is difficult to imagine why states would choose to create additional Class I areas. Although it could be used more broadly, Class I designation is, by and large, a tool to protect federal lands. While those lands lie within state borders, the responsibility for protecting the resources of Class I areas is fundamentally a federal one. It seems to us that only in exceptional cases would states choose to constrain development in order to protect lands for which they are not responsible. Unless the Congress were to do so, the designation of many more Class I areas appears unlikely. But whether or not additional Class I areas should be created depends, first, on whether the PSD program can be changed to better control air pollution.

## RECOMMENDED ACTIONS

All of these findings suggest to us several actions that should be taken and that we have, in fact, recommended in our report. As I mentioned earlier, we believe it would be worthwhile for EPA, in cooperation with the National Park Service, the Fish and Wildlife Service, and the Forest Service, to examine a broader group of Class I areas. Such a survey could verify the numbers of sources that are covered under the PSD program and, more importantly, would establish the extent to which air quality in these areas is affected by nearby emission sources.

Depending upon the results of the survey, the Congress may want to consider whether to revise the current thresholds for minor sources and exemptions for major sources contained in the Clean Air Act. Should the survey indicate a need for legislative change, the Congress may also want to consider making federal land managers responsible for designating Class I areas, rather than the states.

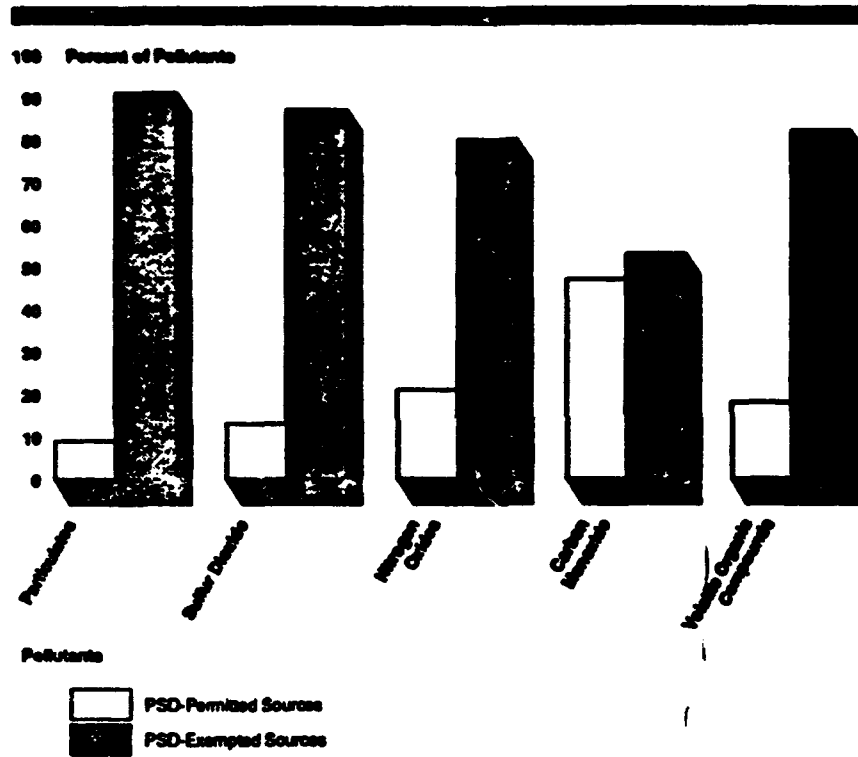
Finally, we believe that the Fish and Wildlife Service needs to develop a long-range plan for gathering the information necessary to support reviews of PSD permit applications. While we do not take issue with the agency's priorities, we note that the Fish and Wildlife Service also has a responsibility to protect air

quality-related values in its Class I areas, a responsibility it cannot exercise without sufficient information.

Mr. Chairman, this concludes my prepared remarks. I would be pleased to respond to any questions.

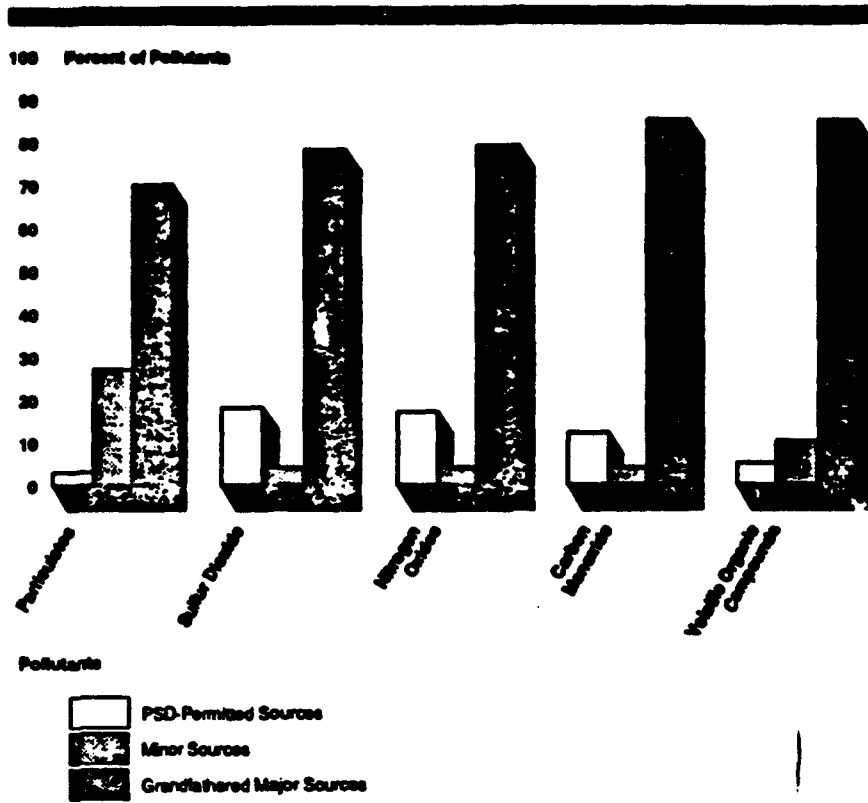
FIGURES AND TABLES

Figure I.1: Pollutants Emitted by PSD-Permitted and PSD-Exempted Sources



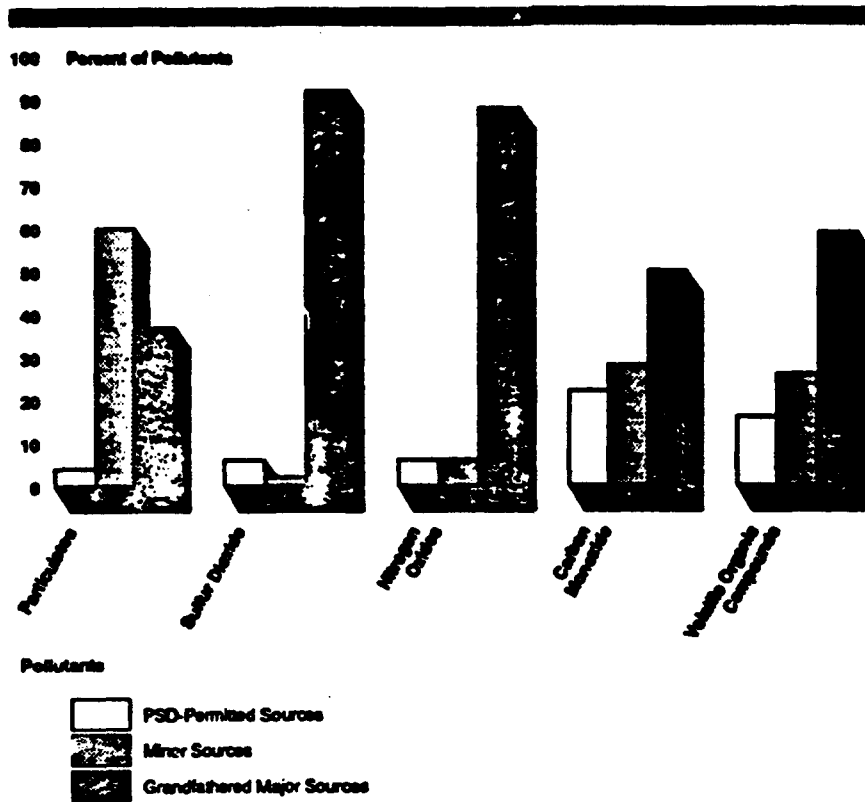
Volatile organic compounds are measured as precursors to ozone, one of the criteria pollutants.

**Figure I.2: Pollutants Emitted Near Shenandoah National Park**



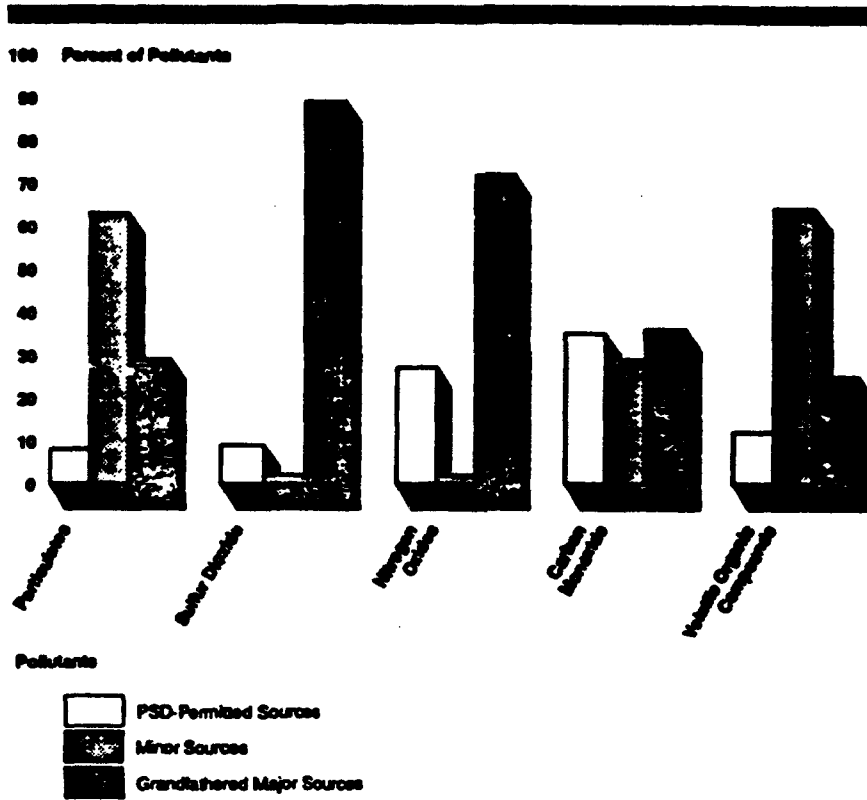
Volatile organic compounds are measured as precursors to ozone, one of the criteria pollutants.

Figure I.3: Pollutants Emitted Near Rocky Mountain National Park



Volatile organic compounds are measured as precursors to ozone, one of the criteria pollutants.

**Figure I.4: Pollutants Emitted Near Flat Tops Wilderness**



Volatile organic compounds are measured as precursors to ozone, one of the criteria pollutants.



Table I.1: Federal Land Manager PSD Permit Application Review,  
August 1977 to August 1987

Agency	Number of permit applications			Disposition of federal land manager recommendations		
	Received	Reviewed and commented, as % of received	Recommended changes, as % of reviewed	Accepted/partially accepted, as % of recomma.	Rejected as % of recomma.	Unknown, as % of recs.
Wildlife	40	25 63%	14 56%	4 29%	7 50%	3 21%
	245	148 60%	25 17%	16 64%	5 20%	4 16%
National Park	107	88 82%	61 69%	26 43%	8 13%	27 44%
	392	261 67%	100 38%	46 46%	20 20%	34 34%