organizations. However, the study concluded, "most individuals felt it too difficult to retrieve relevant material from the mass of government publications and indicated that they expected to learn of important government-developed technology through trade and professional channels. In several firms, those interviewed felt that it wasn't really practical to keep up with and use government technology unless one's firm had government R & D contracts."

How did the respondents feel about various centers that have been established for disseminating technological information? The DRI study found they did not regard them as especially important. Such centers, it was found, "were not widely used, in part because they were not readily accessible. Some interviewees preferred either to rely on available internal services or go directly to known sources of new technology. Going through an information center, they felt, would simply add time and communication problems."

Ranking high among the means for acquiring information about new technology were trade publications and professional journals and face-to-face contacts, especially at conventions, professional meetings, and symposia. It was pointed out, however, that "many individuals questioned indicated that formal papers presented at meetings tended mainly to serve the interests of the speaker (by boosting his status), and that they typically failed to include proprietary or really useful information. . . . While both local and national meetings were important, the highest value was placed on meetings which narrowly focused on the individual's particular field of interest."

On the basis of their study the DRI investigators produced a number of recommendations. Since it was found that over one-third of the respondents had taken formal course work during the previous year, it was suggested that the back-to-school habit be exploited for the purpose of accelerating the dissemination of new technology. It was suggested, for example, that efforts be made to establish closer ties between industry and the academic world through establishing lecturing posts for industrial scientists and engineers. In addition, it was proposed that the science and engineering curricula include "problem-solving courses emphasizing technology acquisition." It was also suggested that internships be established enabling industrial employees to work in federal laboratories, and, in general, that manufacturers pay more attention to the federal R & D effort, and especially to the systems now under development for disseminating scientific and technical information.

Since a politically well-entrenched order of priorities dictates that some 80 percent of federal R & D money goes into military and space objectives, it is difficult to argue against the proposition that efforts should be made to extract all the good that is to be had from this lopsided allocation of resources. When viewed from this premise, NASA's inquiries into spin-off are praiseworthy and merit continuation. Still it has to be recognized that primitive cost-effectiveness analysis long ago discredited the burning of barns for the roasting of pigs. If the federal government is concerned about the state of technology in electric batteries, printing and reproduction, industrial controls, and medical electronics, it might as well recognize that there are more direct routes to progress than through the collection of droppings from military and space research programs.—D. S. GREENBERG

# Air Pollution: The "Feds" Move To Abate Idaho Pulp Mill Stench

*"How many times have I heard it said 'it smells like money.' This stupid silly joke is not funny. To me it 'smells like death.'* "—From a letter written by a Lewiston, Idaho, resident.

*Lewiston, Idaho.* Officials of the Public Health Service (PHS) estimate that more than 50 percent of the American population lives in areas of constant air pollution. Some of those who suffer from bad air in the nation's cities may have the idea that they could escape these irritants if they moved to a less populated region, say, to some location in the Rocky Mountain states —"where the skies are not cloudy all day," as the song goes. But unpolluted places are becoming more and more unusual. Communities such as Salt Lake City, Utah, Lewiston, Idaho, and Missoula, Montana, are only a few of the western cities where the skies are often clouded by a man-made haze.

On 19 August, a couple was awarded $2147 by a U.S. District Court because pollutants from the Weyerhaeuser pulp mill in Springfield, Oregon, had fallen on their property. On that same August date, the participants in a federal air pollution conference in Montana called for the Rocky Mountain Phosphates, Inc., plant at Garrison, a town of about 200 people between Missoula and Helena, to take pollution control measures or face closure. The conference on the Garrison plant is of importance to citizens in other areas of the country, because it is the first federal conference called to deal with an air-pollution problem located exclusively in one state. It sets a precedent for future federal efforts to abate intrastate air pollution.

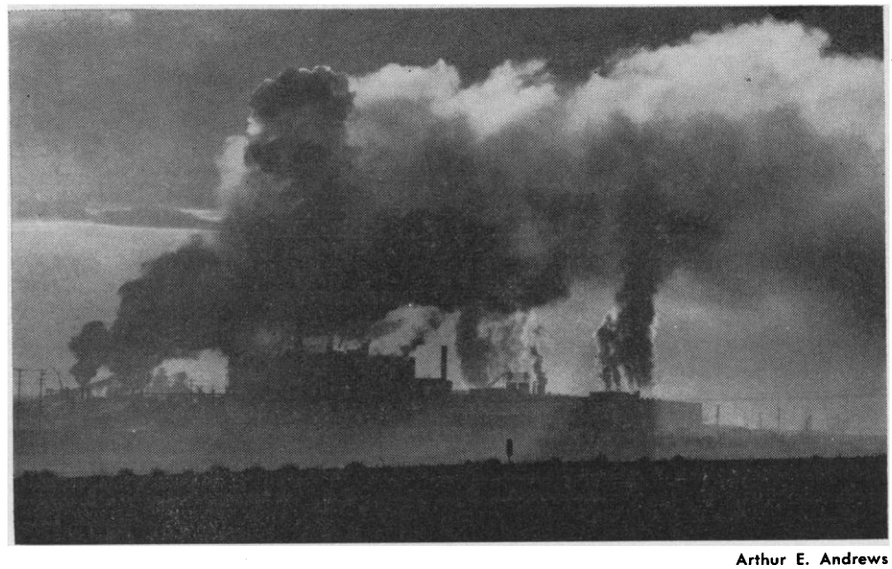
All other federal conferences conducted under the provisions of the Clean Air Act of 1963 have been called to deal with interstate situations. In all, there have been six formal interstate conferences, four of which were held this year: (i) Bishop, Maryland—Selbyville, Delaware; (ii) a pulp mill in Ticonderoga, New York, which was bothering Vermonters; (iii) northern New Jersey—southern New York; (iv) Kansas City, Kansas—Kansas City, Missouri; (v) Lewiston, Idaho—Clarkston, Washington; (vi) Parkersburg, West Virginia—Marietta, Ohio. The first example involved the Bishop Processing Company which was found to produce "sickening, nauseating and highly offensive odors"; this is the only case to be taken to a more advanced enforcement stage—that of a formal hearing. In May of this year, the Hearing Board told this animal-rendering company in Maryland to abate the "discharge of offen-

sive odors." If the company does not comply within 6 months, the U.S. Attorney General can take action against it in the federal courts.

The history of federal action to alleviate air pollution in Lewiston illustrates many features of the national air-pollution abatement situation: the deliberative manner in which the PHS acts in such cases; the failure of state, local, and industrial officials to respond to preliminary federal pressure or to take significant steps on their own; and the kind of citizen reaction which can accompany federal intervention.

Three years ago, a writer for the *New Republic* said that "Lewiston in Idaho, and its neighbor Clarkston in Washington, are possibly the smelliest cities in the nation." This judgment can be legitimately doubted—the odor emanating from the nearby pulp mill is neither always highly objectionable nor always noticeable. Nonetheless, the plant can belch out much odor and smoke over populated areas; this is especially true during the times when the wind comes from the east to blow plant effluent over the cities of Lewiston and Clarkston which lie immediately to the west of the mill. There is no reason to believe that the Lewiston mill is a particularly bad example of its type, but as the PHS has pointed out: "Kraft pulp mill odors are . . . almost universally displeasing and repulsive."

As in Lewiston, much of the nation's industry is situated in valley bottoms, the location most likely to create air-pollution problems. The Lewiston-Clarkston situation is especially aggravated by the unusual topographical and meteorological conditions of the narrow valley. The cities and the pulp mill are located slightly to the south of the confluence of the Clearwater and Snake Rivers. To the south, the ground slopes to a bench 700 feet above the valley floor. To the north, massive hills rise with dramatic precipitousness to the Palouse Prairie 2000 feet above the city. In effect, Lewiston is located in an ill-ventilated "hole." North-south winds are uncommon because of the surrounding hills. In fact, Lewiston has little wind at all. The average annual wind speed at Lewiston is 3.8 miles per hour which makes it the least windy city for which U.S. Weather Bureau records are available. (For comparison, Washington, D.C., has an average annual wind speed of 9.5 miles per hour; at the Los Angeles Civic Center, there is an average wind of 6.2 miles per hour.) What wind there is in Lewiston and Clarkston comes mainly from the east—from the direction of the pulp mill.



Arthur E. Andrews

The Potlatch Forests, Inc., pulp mill immediately east of Lewiston, Idaho. The photograph was taken during an air inversion, a common meteorological occurrence in the Lewiston-Clarkston valley.

Air inversions are common in the valley, especially in the fall when low-level inversions occur about half the time. During 1966, Lewiston Weather Bureau records indicate 13 periods of possible high air pollution lasting from 3 to 20 days.

According to statistics given to the PHS by the Lewiston plant's owners, Potlatch Forests, Inc., the pulp mill and power boilers daily emit the following substances into the air: 25,090 pounds of particulates, 1662 pounds of mercaptans, 1663 pounds of hydrogen sulfide, 359 pounds of alkyl sulfide, 186 pounds of alkyl disulfide, from 44 pounds of sulfur dioxide in the summer up to 1950 pounds in the winter, and more than 15 million pounds of water vapor. The PHS has said that the mill contributes 77 percent of the estimated gaseous emissions and 82 percent of the estimated particulate emissions in the area and is the major contributor of hydrogen sulfide and other malodorous organic gases.

The Lewiston pulp mill was a Christmas present from Potlatch Forests, Inc. (PFI) to the community in 1950. The mill opened on Christmas Eve of that year; it soon generated complaints about a new odor in the air and about particle deposit on the surfaces of stores, homes, and automobiles. In an interview, one Lewiston resident involved in the opening of the mill said about the mill's managers: "They knew what the effect would be, but they didn't care. 'To hell with 'em'—that was the company's attitude toward the public in those days."

The PFI could afford to take a somewhat cavalier attitude. As the principal employer in a one-industry town, PFI could, to a great extent, call the shots. Partly because of statements by PFI officials, local residents have been reluctant to criticize the company for fear that it would pull out of Lewiston, thus leaving the area in economic disruption.

Despite this general wariness about "biting the hand that feeds," a couple of damage suits were filed against PFI in the mid-50's by Clarkston residents. However, filing such suits cost more than the plaintiffs were able to gain. A Clarkston lawyer, S. Dean Arnold, sued PFI for damages to health and property in 1955. He was awarded only $7.50, 1 percent of the cost of repainting his house. During the trial, Arnold's lawyer said "PFI appears to be a sacred bull around here."

Smoke from the nostrils of the "sacred bull" can be especially bothersome during the fall and winter inversions when the pulp mill's pollutants are trapped in the valley. A major inversion of this type occurred in 1959; one resident recalls it as "the black night." After such incidents, more citizens protested, and the mayor of Lewiston created a committee on air pollution. In November 1960, the

mayor of Clarkston wrote to the chief of the Division of Air Pollution of PHS to request help in abating an interstate air-pollution problem said to be principally caused by the PFI mill. In response to this request, the PHS initiated several meetings with local and state authorities and began a study of air pollution in 1961–62. The PHS study indicated that Lewiston and Clarkston had a common air mass and that either city could pollute the air of the other. Although listing the PFI pulp mill as the major source of gaseous and particulate emissions in the region's air, the PHS did cite other smaller industrial sources of pollution, as well as emissions caused by heating, automobiles, and refuse burning. The PHS report stated that 50 percent of the physicians in Lewiston and Clarkston had been interviewed and that "a large majority of the physicians stated that they concurred in their patients' belief that certain of their disease conditions were related to air pollution" and that several "noted improvement in patients with respiratory conditions when the patients moved from the area of high pollution" or used air conditioning. The PHS also reported that silver tarnishing in Lewiston-Clarkston was much greater than in nearby testing stations.

PFI's initial reaction to the federal action seems to have been to ridicule studies such as that on silver tarnishing and to become angry at intervention from Washington. However, the company now seems, at least on the surface, more eager to please. This year, the PHS report said that PFI had rendered "excellent cooperation" in supplying information. PFI President Benton R. Cancell said in a telephone interview last week, "I don't want to get into any fights with the Public Health Service. They whip me every time."

Included in the PHS study was an opinion survey conducted in 1962 about community perception of air quality in Clarkston. Nearly 80 percent of those interviewed said that their city was affected by air pollution, and almost two-thirds stated they were bothered by it to some degree. More than 90 percent who recognized air pollution as a problem first mentioned the pulp mill as being among the sources of such pollution. Those who conducted the survey indicated that residents had great loyalty to the region despite its air problem; they concluded that the typical resident "may be compared to a man whose wife has 'B. O.' Such a man may love his wife and think not at all of leaving her; yet he cannot help wishing at night or when company comes that she or her doctor could rid her of this condition."

In an effort to clean up the area's "B. O.," the PHS in July 1963 called a conference of local authorities which recommended the creation of an interstate Air Resource Management Council in the following year. Such a council was not created, a fact which PHS used as justification for initiating action under the provisions of the Clean Air Act on 23 December 1965. After visiting the PFI mill with state officials in 1966, PHS called for a formal conference.

In March of this year, the conference on the area's air pollution was held in Clarkston. Such conferences are not adversary proceedings; there is no provision for cross-examination of those who present their views. The conference provided many area citizens with an unparalleled opportunity to voice their frustration about the condition of their local atmosphere. A petition circulated by the Concerned Citizens for Clean Air for presentation at the conference, signed by 495 area residents, protested "pollution from industrial sources" and read, in part, "This contamination of our air and its odor affects us from headaches, watery eyes, runny noses and breathing difficulties, to paint corrosion or other property damages. This area has put up with this problem for 17 years, which is long enough." In his presentation, the

The plume from the Potlatch Forests, Inc., pulp mill and other PFI plants often drifts to the west over Lewiston, Idaho, and Clarkston, Washington. The 2000-foot hills which rise sharply to the north of the river act as a barrier against dispersal of the atmospheric pollutants emitted by the pulp mill.

chairman of the Concerned Citizens said that, despite the fine natural location of Lewiston-Clarkston, "we find that we have a national reputation for having created an aerial cesspool and being willing to wallow in it." Several area doctors stated that they believed air pollution in the area increased the incidence of upper respiratory illnesses. One resident, Vern Morton, was more dramatic; he stated, "I believe the horrible, rotten stench coming from the smokestacks of the Potlatch pulp mill here in Lewiston is killing me; I am afraid to remain here; I don't want my family or myself to die premature deaths."

At the conference, federal officials said that emissions of pollutants in the area were just as substantial as when the first studies were conducted in 1961–62, but that there were still no effective ordinances or air-pollution control programs. William H. Megonnell, chief of the PHS's air-pollution abatement division, said that the problem had developed and grown in the area "because of inaction of state and local agencies and the inability of one state to deal with pollution generated in the other."

Idaho state health administrator Terrell O. Carver pointed out that the federal government was also a late comer to the problem of air pollution and, by way of explanation, noted that the Idaho state appropriations for air-pollution control had been so low since 1959 that no abatement work could be undertaken in his state. PFI President Cancell said that "as a company, I submit to you that we are doing everything in our power to be a good citizen. We are a collection of people like those in any other economic, social, or government group. We are no better. We are no worse."

Being "no worse" was not good enough. The conference participants found that PFI should be required to control its offensive odors, that an interstate air pollution agency should be set up, and that refuse should not be burned in the open or in single-chamber incinerators. If these recommendations are not put into effect, the HEW Secretary can take the next enforcement step—establishing a hearing board.

Meeting preliminary deadlines set by HEW, PFI announced this July that it was purchasing three new pieces of pollution-control equipment for $862,200. In an interview, the PFI president said that he didn't know whether the new equipment would eliminate odor. "I can only pray that it will," he said. Area residents now have confidence that PFI is moving to combat its odor problem.

In an interview in Washington, William Megonnell said that he didn't expect that PFI could get rid of its smoke and steam or even 100 percent of its odor. But Megonnell does think that adequate technology exists so that PFI can eliminate "90 percent" of its odor emission and its discharge of particulate matter.

In the Lewiston-Clarkston valley, there is a good deal of respect among concerned observers for the care with which the PHS documented its pollution case and for the deliberate manner in which it has taken action to improve the local situation. Even in this area of the Western United States, a region traditionally hostile to the federal government, there seems to be some gratitude for intervention from Washington. As one Lewiston advocate of cleaner air, Peter Gertonson, summed it up: "Without federal pressure, nothing would have come about. If this is interference, I think it is good. This is what the citizen should get from his government." Although many residents of this area may be happy because of federal action, citizens in hundreds of other cities wonder whether the "feds" will ever get around to helping alleviate the air pollution problems in their communities.—BRYCE NELSON

# North Cascades National Park: Copper Mining vs. Conservation

When the Administration's bill calling for the creation of a North Cascades National Park in Washington state was introduced in Congress in March, it seemed initially that the measure might resolve a long battle between the National Park Service and the National Forest Service about which agency should have jurisdiction over federal lands in the area. Instead, the area has become the center of a new controversy, which concerns commercial mining in protected wilderness areas.

What started the latest altercation was an announcement last December that the Kennecott Copper Corporation was negotiating with the U.S. Forest Service about the possibility of operating an open-pit copper mine in the Glacier Peak Wilderness Area. The area is adjacent to the southern boundary of the proposed national park. In May the company acknowledged its interest. Since that time, a number of conservation groups have protested, and many of their members have hiked into the area to take a closer look. Supreme Court Justice William O. Douglas led 150 people on one such hike in early August. Conservationists are particularly angered by the idea of the mine because the Glacier Peak area includes some of the most spectacular scenery in the United States. The area was suggested as a national park as far back as 1906.

The Kennecott mine would be located on a 450-acre site near the 6000-foot level of Miners Ridge, about 7 miles northeast of the 10,528-foot Glacier Peak. The site is about 15 miles from the nearest road. Kennecott has indicated that it has made no final decision concerning the mine. To date it has not made application either to the Forest Service for the necessary access permits or to the local planning commission for permits. Legally, however, the corporation is entitled to mine the ridge. Under the 1964 Wilderness Act, exploration for minerals may continue in wilderness areas until 1984 and valid claims may be mined indefinitely, since the Forest Service has no right of condemnation. What makes the current controversy unique is that this is the first major confrontation between the public and a mining company with patented mineral rights within a wilderness area. Patented claims confer title of the land to the claimant.

The 458,000-acre Glacier Peak area is among the 9.1 million acres that became the Wilderness System under the act designed to safeguard unique public land against private use. During the fight in Congress over passage of the bill, a compromise was arranged whereby mining and grazing provisions were