ratory personnel are not sufficiently regulated. For the past couple of years, Kennedy and Javits have been thinking about an overhaul of the 1967 Clinical Laboratories Improvement Act, but nothing much happened until last year, when H. David Banta and Arthur Viseltear, participants in the Institute of Medicine's Robert Wood Johnson health policy fellowship program (*Science*, 19 Sept. 1975) appeared on the scene. As one Senate staffer said in reply to a question about the timing of the new legislation, "Suddenly we had some extra manpower to help us with health legislation, so we were able to take the clinical labs bill off the shelf."

Kennedy says there are a lot of things wrong with the way the clinical laboratory business is regulated and notes the following defects:

- Only interstate labs are regulated under the 1967 act.
- At least 26 states have no mandatory lab program and only five states have what are considered to be "good" programs. In some states, just about anybody can open a lab, whether he or she has credentials or not.
- Fewer than a dozen states license clinical laboratory personnel.
- Intrastate labs now are regulated only if they participate in Medicare. [Senate investigations of labs participating in Medicare reveal widespread fraud, including a practice of charging more for tests done for Medicare patients (paid for by the government) than for private patients.]
- Hospital labs undergo only periodic checks for quality.
- Physician-office laboratories operate without any agreed-upon standards and often employ persons with no qualifications for the laboratory work needed.
- "Bureaucratic infighting" among those agencies in the Department of Health, Education, and Welfare (HEW) that have authority to regulate laboratories under either the 1967 act or Medicare regulations makes HEW's activities in the area largely ineffectual.

If Congress has its way, national standards will be established for all labs and personnel, including those in physicians' offices. And there will be created somewhere within HEW an Office of Clinical Laboratories with ultimate authority to implement the law. At present, the CDC and the Bureau of Quality Assurance within HEW and the Bureau of Health Insurance within the Social Security Administration (SSA) have responsibilities for controlling clinical labs, but conflicts among them have been notable.

In fact, relations have been so bad that HEW has tried to straighten things out by getting them each to sign an interagency agreement that Assistant Secretary for Health Theodore Cooper euphemistically says, "more clearly defines and clarifies the functions of each agency." Kennedy is not persuaded. Writing in *Cadence*, he says, "Previous documents of similar intent have all too soon been disregarded." He quotes an HEW memo as evidence that the differences among the three agencies are too great to be resolved by any concordance and offers it as added proof that a new federal office is needed. The memo says:

> We believe that past delays in improving laboratory regulation are not due to bad faith or poor performance on the part of SSA, the Bureau of Quality Assurance, or CDC. Rather, the delays stem from honest philosophical differences on how to proceed, a natural reluctance to engage in open confrontations or raise disputes to the Secretary or Under Secretary for final decision and, finally, the absence of any action-forcing mechanism to spur policy resolution.

Congress believes that a central office could be that spur. The Administration heartily disagrees. "The proposed legislation to set up a new governmental entity in the clinical laboratory field would be no more capable of progress than the authorities already on the books," says Cooper, in what can, in view of the present situation, only be seen as a disheartening assessment. The Administration does not want a central office, but already there is infighting about where in HEW such an office should be located were Congress to succeed in forcing its creation. In the Social Security Administration, or the Bureau of Health Insurance, or the Center for Disease Control? Thus far, the draft legislation is silent on this point, but there is lobbying for it from all sides.

Whatever the final nature of new legislation may be, the job of improving the quality of thousands and thousands of laboratories, large and small, sophisticated and simple, is not going to be easy and eliminating error may be next to impossible. One obvious, but unwieldy, solution would be to have all tests done twice. Clearly, as a matter of national policy, such a practice would be ridiculous. Still, it might be worth thinking twice about in at least some individual cases. One Senate staffer already has. Not long ago, he received a test result that said he was OK, but symptoms of ill health persisted and, wondering whether the lab had been wrong, he returned for a second test. That, too, proved negative. "I guess I was satisfied," he says. "Anyway, eventually I got better."

—BARBARA J. CULLITON

Clean Air Act: Congress Deliberates on Amendments

Both houses of Congress this month are scheduled to vote at long last on 1976 amendments to the Clean Air Act. The act was scheduled for review in 1974 but this was postponed a year because of the impeachment turmoil. New bills were introduced last year which have been subjected to more than a year of deliberations by the Senate Public Works Committee and the House Interstate and Foreign Commerce Committee.

The bills now awaiting floor action allow for additional delays in enforcing emission standards both for automobiles and for stationary sources—that is, heavy industry, primarily power plants. The most significant aspect of the proposed measures is that they explicitly put into law regulations pertaining to "significant deterioration." These control development in areas of the country that now enjoy air quality better than that required by the national ambient air quality standards.

The bills have had a tortuous progress, including over 130 markup sessions, through subcommittees headed by Representative Paul Rogers (D–Fla.) and Senator Edmund Muskie (D–Maine). They have been subjected along the way to terrific lobbying pressures from business, heavy industry, utilities, and automobile interests. "This is one of the most intensely lobbied bills I have ever seen," said one Senate staffer. Attempts have been made by industry to portray the amendments as thinly veiled federal

land use controls, although in fact, according to Leon Billings of the Muskie subcommittee, most of the new measures simply codify policies that have already been affirmed through judicial interpretation of the 1970 Clean Air Act and Environmental Protection Agency (EPA) regulations.

The Senate and House bills are both considerably stronger than Administration proposals which have been so lenient—the President has asked, for example, for a 5-year freeze on current auto emission standards—that they have been largely ignored.

In what is the most controversial of the major provisions, the bills spell out for the first time what is meant by "significant deterioration," otherwise known as "nondegradation." The original 1970 Clean Air Act amendments do not mention "significant deterioration": the concept that areas with higher than mandated air quality should strive to keep it that way was imposed by a 1974 court decision, which directed the EPA to establish regulations to that effect. The EPA therefore devised a three-tier classification system for all the superclean regions of the country. Class I would apply to areas that must be allowed to remain pristine; class II would allow some degradation, and class III would allow dirtying of the air to ambient standards. EPA went on in 1975 to designate all qualifying areas as class II and left it to the states to apply for redesignation.

The House and Senate bills put this system into law. Certain areas, namely national parks and wilderness areas above a certain size (25,000 acres for the House, 5,000 acres for the Senate) would have a mandatory class I designation. This means that present levels of sulfur oxides and particulates would be allowed to increase only 2 percent over present values. In class II areas, 25 percent deterioration would be permitted. The Senate bill contains no class III; in the House's class III areas, a 50 percent increment would be allowed, providing the total pollution did not exceed 90 percent of that allowed by secondary ambient air standards. States would be free to use the allowable increments any way they please.

The U.S. Chamber of Commerce has been having a fit over this part of the bills. Its environment lobbyist, Gary Knight, says he has devoted most of the last 8 months to battling the "nondeg" provisions which, he says dramatically, "would mandate undeveloped areas into eternal poverty." The cleanest areas, he reasons, are also the most undeveloped economically, and if they are subject to nondegradation classification they won't be able to accommodate the heavy industry necessary for such development. The chamber also claims that with the establishment of the huge "buffer zones" around new plants that would be necessary to ensure that no pollution escaped to neighboring class I areas, many states would find development barred in 70 to 80 percent of their land areas. The chamber's position is that the new air act is basically a thinly disguised "land use" bill, with air quality being the single criterion. And "land use," in its lexicon, has become a euphemism for "no growth."

Observers say the Chamber of Commerce has been distorting the case by basing calculations on the assumption that all new sources would be giant power plants. In fact, according to a study by the EPA and the Federal Energy Administration on the effect the bills would have on utility siting, almost all proposed power plants could be built as planned, providing they incorporate appropriate emission controls. As for the feared buffer zones, none are mandated in the bills and this decision is left up to states.

Delayed Compliance

With respect to bringing dirty areas of the country in compliance with ambient air standards, the committees chose to provide for individual extension of compliance dates for emission sources rather than extend the national deadline for adherence to primary (health-related) standards, which still is 1975. The law already allows a 2-year extension for stationary sources, to 1977. The bills would make an additional extension available, to 1979. Exceptions to this deadline would be granted in some cases, notably if a plant is experimenting with an "innovative" technology that promises to be more efficient than existing techniques. The bills also make it explicit that "intermittent controls"—tall stacks for dispersion, fuel-switching, temporary plant shutdowns—are not allowed as a compliance strategy. As has already been affirmed by court decisions, all controls have to be "continuous." The Senate adds a new enforcement tool to the law in the form of a "delayed compliance penalty." This means that a company, starting in 1979, would have to pay a monthly penalty equal to what it should have been spending on abatement technology. This is supposed to eliminate both the economic incentive to delay installation of controls, and the competitive advantage over companies that have been investing in antipollution equipment. The House bill sets a $25,000 per day penalty for excess emissions.

In order to prevent backsliding in air quality regions that are now "dirty"—that is, which have not yet achieved primary or secondary ambient standards—the bills stipulate that any new or expanded source will not be allowed to add to the existing level of pollution. A company with several facilities in an area must have all of them in compliance before it can build a new one, and the new one must use best available control technology. Some companies, then, in order to expand, will have to reduce emissions from existing plants. This provision applies particularly to steel companies, which are generally in dirty areas to begin with, and whose cleanup efforts have not, as a rule, been outstanding.

In order to maximize the potential for development in areas designated for nondegradation (all of which are now designated by EPA as class II), the House bill requires that a new source use best available control technology, whether or not it is needed at the time to stay within allowable increments. The Senate bill leaves the control technology requirement decisions to be made by the states, on a case-by-case basis.

The alarm expressed by lobby groups notwithstanding, most of the conflicts over the new legislation have been over the degree to which standards should be relaxed, not tightened. The biggest area of slippage has been in provisions relating to the auto pollution problem, and they supply evidence, if any was needed, of the difficulty in making even the slightest changes in America's autocentric way of life.

Both bills back off yet again on final compliance date for statutory emissions of hydrocarbons (HC), carbon monoxide (CO), and oxides of nitrogen (NO_x). The House bill would retain through 1979 the current standards for HC (1.5 grams per mile) and CO (15 grams per mile); these standards had previously been extended through 1977. The standard for NO_x, now 3.1 grams per mile, would go to 2 grams per mile. Statutory standards (0.41 grams per mile for HC, 3.4 for CO, and 0.4 for NO_x) would go into effect in 1982, with the option of five 1-year extensions for the NO_x standard.

The Senate bill extends the 1977 standards by 1 year, and the statutory standards would go into effect by 1980. The NO_x standards, however, would be relaxed from 0.4 to 1 gram per mile, and future handling of the NO_x question would be made a "research objective." The question of nitrogen oxides remains a touchy matter. There has been increasing concern over the possible effects of these substances on health, but research has still not revealed what levels are dangerous, and little progress has been made in abatement technology for them.

The further slippage in auto emission deadlines embodied by both bills is a source of distress to environmentalists, but the EPA, according to assistant administrator for air and waste management Roger Strelow, thinks the bills are moving too hastily. Administrator Russell Train proposed last year that there be a 3-year freeze on the 1977 standards followed by a 1-year move to the interim standards currently applicable in California before going to the statutory standards in 1982. The EPA has been more sympathetic than the writers of the bill to the industry's pleas for leniency in view of the energy crisis and the misadventures of the economy.

A selling point for the bills has been their emphasis on giving the states more responsibility for administering air laws and more discretion on how they choose to go about it. States, for example, get first crack at allowing extensions for stationary sources to meet compliance deadlines, and are given greater participation in decisions affecting federally owned areas. However, the major shifting of responsibility to states is in the area of transportation controls, such as levying parking taxes, establishing bus lanes, and other measures to reduce automobile traffic. EPA authority to impose such controls was curtailed by court action in 1973; now, says Strelow, the agency realizes that the political, economic, and social complications are so great that such measures are best left to the states. The bills under consideration only allow EPA to order states to make transportation control plans where primary air quality standards are being violated. Even then, controls may be delayed (up to two 5-year delays in attaining the primary standards would be allowed) if localities insist that controls would result in "serious adverse social and economic effects" (according to the Senate wording.)

Related to transportation controls is the problem of auto pollution from "indirect sources," that is, shopping centers and sports arenas that become hot spots for auto pollution. Business interests say that control of indirect sources, through such measures as denying construction permits, amounts to "land use," and strongly oppose it. EPA's concerns are therefore also limited to threats to the primary standard and if the agency wants to take action it must be through the courts.

Among other provisions contained in one or both bills are the following:

- A 2-year study to determine the effect of various substances, namely halocarbons, on the ozone layer, with EPA required to decide whether to issue new regulations at the end of that time.
- Worker protection provisions giving new avenues of redress to employees who think the costs of cleanup have been used as an excuse to fire them.
- A provision awarding court costs to the "prevailing party" (other than the government) in suits involving compliance to the Clean Air Act.
- Protection for independent manufacturers of auto parts by stipulating that purchase of replacement antipollution parts from other than the original dealer does not detract from the car buyer's warranty.

Environmentalists say, predictably, that the bills are too weak. They don't like the extensions for stationary sources or automobiles, and foresee endless delays in establishing transportation controls if the matter is left up to the states. They want the House to eliminate its class III category for nondegradation. They also want more mandatory class I areas. Despite the similarity of the bills, they fear that the nondegradation provisions will be gutted when the bills reach the floor because of the intense pressure from industry lobby groups. If that happens, says Rafe Pomerance of the National Clean Air Coalition, "they will destroy the national parks." The recently cancelled Kaiparowits power project in Utah, which environmentalists have been fighting tooth and claw for years, probably would not have stood a chance under the proposed legislation because of its proximity to national parks and wilderness. But Richard Ayres of the National Resources Defense Council predicts that the legislation would serve little to deter the blossoming of coal-fired power plants in the West, and he believes the environmentalists' nightmare of plumes of smoke hanging over the Grand Canyon still stands a good chance of coming true.

The Senate was scheduled to vote on its bill on 4 May; the House, shortly thereafter. Most vulnerable of the major provisions are those relating to nondegradation. Senator Frank Moss (D–Utah) is waiting to spring an amendment that would wipe out the whole section. Assuming the bills do not get snagged in conference—a lengthy delay is unlikely because the auto companies need to know very soon what to do about their 1978 models—the final bill should be ready for the presidential signature some time this summer.

—CONSTANCE HOLDEN

Earthquakes: Los Angeles Prediction Suggests Faults in Federal Policy

In recent weeks several people, from radio preachers to distinguished scientists, have been warning that a severe earthquake could strike the Los Angeles region, including portions of the city itself, possibly within a year. A quake of Richter magnitude 5.5 to 6.5, which would be comparable to the 1971 San Fernando quake which caused property damage of $550 million, was predicted in a scientific paper given on 15 April in Washington, D.C., by a California Institute of Technology seismologist, James H. Whitcomb. The prediction, a rare event of itself in seismology, was based on seismic wave measurements and followed on the heels of other reports of a geologically sudden 1-foot uplift along the same part of the San Andreas fault, and extending over a 4500-square-mile area centered around the little town of Palmdale.

So far the two findings are not known to be related to each other. But both are being taken seriously by scientists and officials who feel they could be signs that a quake of major proportions could be imminent.

Earthquake prediction this week is the subject of complementary stories, this one and one in Research News (page 538) reporting on successful quake prediction in China.

All this caused Doug Clark, a Los Angeles radio evangelist, to devote a special, 1-hour program to earthquakes, the "Jupiter effect," and the Book of Revelations, while offering his own tome on earthquakes to listeners in return