ACID RAIN - AN OVERVIEW

SYNOPSIS

Significant portions of the eastern United States and Canada receive annually about 40 times more acid in precipitation than normal. Increased acidity has resulted in several hundred fishless lakes in New York and Ontario. Acid accumulates in winter snows, and the sudden injection of acid that occurs with spring thaws can kill even mature fish. Metals such as aluminum, iron, mercury and lead that normally are chemically unavailable can be mobilized by acid rain and snow.

The principal cause of acid rain is the release of sulfur dioxide and nitrogen oxides by the burning of fossil fuels. In the United States, 65 percent of the sulfur dioxide and 30 percent of the nitrogen oxides are emitted by electric utilities. Confilicts revolve around (1) the scientific evidence and lack of it over what the causes and effects of acid rain are, (2) who is responsible for it, (3) how it should be corrected and (4) who will pay the cost of correcting it. Existing law does not directly address control of acid rain. A very strong legal argument can be made for not initiating action that potentially would provide relief from acid rain.

The problem is likely to get worse before it gets better and it will get better only if corrective action is taken. Physical solutions include fuel conservation, minimal use of older power plants, coal washing and nuclear power generation. Political solutions include stringent enforcement of emissions restrictions, amendements to the Clean Air Act and some form of financial relief for corporations that have or will take corrective action. The economic costs of not reducing emissions are of a magnitude at least equal to the costs of significantly reducing emission.

Between 1975 and 1995, sulfur dioxide emissions by utilities in the United States will increase at least 10 percent under the best of conditions and at least 28 percent under the worst. Without a reduction in the rate at which pollutants are being introduced, the present life-reducing trend will not just continue, but can only gain momentum and intensity.

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November, 1981

and Wildlife Management

ACID RAIN - AN OVERVIEW

Acid rain, the deposition of strong acid in rain, snow or dry particulates, now occurs in most of eastern North America. (1:12) Significant portions of Ontario and Quebec and most of the north-central, north-eastern and south-eastern United States receive annually about 40 times more acid than expected. (1:13) The documented presence of acid rain in Colorado has given cause for concern for the western United States as well.

Soils that are naturally sensitive to the effects of acid rain are widely distributed. Included are highly weathered soils in the south-western United States, the shallow and steep soils of the Appalachian Highland regions in the Adirondack Mountains, and the coarse, non-basic tills of New England. (2:iv) The most rapid increase in precipitation acidity over the past 20 years has been in the Southeast United States concurrent with the increase there in the urban and industrial activities that give rise to emission of sulfur and nitrogen. (3:49)

The Effects

The consequences of acid rain, under given but common conditions, are both environmentally and economically severe. Some aquatic life is destroyed as pH drops. Increased acidity has resulted in more than 200 fishless lakes in New York...more than 200 in Ontario...and more than 15,000 in Sweden. Several thousand lakes in Minnesota and Wisconsin and 48,000 in Ontario are considered vulnerable to increased acid levels. (4:19) The Canadian Environmental Minister has declared acid rain to be "...the most pressing environmental concern for Canada...." (5:13)

Fish caught in acid waters show higher concentrations of mercury, (4:19) and acidification alters plankton communities and amphibian populations. (1:16) In Nova Scotia, nine rivers with a pH of 4.7 no longer support salmon or trout reproduction. (1:15) Acid accumulates in winter snows, and the sudden injection of acid that occurs with spring thaws can kill even mature fish. (4:19) Materials, particularly aluminum, leached from surrounding soils by acid soultions may also be biological toxicants.

Some forms of aquatic life indigenous to acid-sensitive areas could face extinction...one race of brook trout may already have been extirpated from waters affected by acidification.

The potential is very limited for reversing the effects of prolonged acid rain on aquatic systems. There is no natural means presently known by which an acidified lake could be restored to its original condition so long as the inflow of acid countinues, or once the natural buffering capacity of the system has been exhausted.

As mineral nutrients such as calcium, magnesium, potassium and sodium are leached from soil at an accelerated rate caused by acid rain and snow, reduction in forest and agricultural productivity could result, but has not yet been demonstrated. Other metals (e.g. alumimun, iron, mercury, lead) that normally are chemically unavailable, can be mobilized by acid rain and

snow, ultimately poisoning plants through their roots. (6:2) Ozone, another air pollution phenomenon, is also known to damage vegetation, particularly the reduction in the yields of crops, including tobacco, soybeans, corn, potatoes and grapes. (1:13)

Erosion of man-made surfaces by acid rain is widespread. Limestone, marble and other masonry materials that contain carbonate are very susceptible to attacks by acid deposition, as are metals, paints, and plastics. (1:18)

The affects of acid rain on human health include at least two indirect effects of particular concern; (1) the contamination of edible fish by toxic materials such as mercury, and (2) elevated levels of toxic elements in drinking water supplies (lead, cadmium, copper and zinc).

No clear evidence exists, however, that adverse health effects have occurred as a direct result of acid precipitation. In one Pennsylvania county 16 percent of cistern waters contained lead in excess of drinking water standards. (1:16) There are other implications of acid deposition related threats to human health, (such as particulates transporting carcinogens and inhalation of sulfuric acid particulates, (4:3.9-9,2) but direct cause and effect relationships (i.e. linking the source and victim) have not been demonstrated.

The Process

Generally, acid rain is formed when sulfur dioxide and nitrogen oxides (SO_x and NO_x) as gases or on fine particles in the atmosphere combine with water vapor and precipitate as sulfuric acid or nitric acid in rain or snow, or as dry particulates. (3:43) Particulates can persist in the atmoshpere for as long as two to six days and can be transported hundreds of miles. (4:3.9-10)

Under most "natural" conditions, precipitation has a pH of about 5.6 (pH 7.0 is neutral) because atmospheric carbon dioxide forms carbonic acid, but may be well above 6 in regions with calcareous soils. A whole number change in a pH value indicates a tenfold change in acidity. Rain with pH as extreme as 2.4 was recorded in Scotland in 1974. (3:43) "In recent decades the acidity of rain and snow has increased sharply over wide areas. The principal cause is the release of sulfur oxides and nitrogen oxides by the burning of fossil fuels." (3:43) The level of emission is expected to rise further with increased burning of coal.

The Sources

Approximately 55 million tons of sulfur dioxide (the primary cause of acid deposition) and nitrogen oxides are emitted each year in the United States, with 65 percent of the sulfur dioxide and 30 percent of the nitrogen oxides emitted by electric utilities. The transportation sector contributes about 40 percent of the nitrogen oxide emissions, (1:26) and the industrial fuel combustion sector is the other major source. (1.8) The upper Ohio River Valley is the major regional source of sulfur dioxide, (1:26) with Ohio in particular having been labeled by one source as "...the most significant producer of SO_2 pollution in the eastern United States, and was estimated

to produce twice as much sulfur dioxide pollution as New York, New Jersey and all New England combined...." (6:6)

Total Canadian sulphur dioxide emissions are about one-fifth those of United States sources, and are concentrated in the non-ferrous smelting sector (copper-nickel) which accounts for 45 percent of total sulphur emissions. Power plants account for little more than 10 percent, while other combustion sources and other industrial processes nearly equally account for the remaining Canadian sulphur dioxide emissions. Almost half of Canadian emissions come from a small number of non-ferrous smelters. One of these smelters (INCO), located in central Ontario, is the largest single sulphur dioxide emission source in North America, and is responsible for fully 20 percent of Canada's sulphur dioxide emissions. Three quarters of the total Canadian emissions are east of the Manitoba-Saskatchewan border. (1:26)

An irony of the acid depostion/transboundary long range transport problem, is that, in an attempt to decrease local pollutant concentrations, emission sources have built increasing numbers of ever-taller smoke stacks in order to comply with Clean Air Act requirements. The result has been that what were once local pollution problems, have been effectively turned into regional pollution problems. (3:44)

Large quantities of pollutants can be released without violating ambient air standards in an area if the emissions are sufficiently dispersed. Therefore, it is possible for a state to institute a control program sufficiently strigent to protect local health, as defined by primary national ambient air quality standards, but that still permits pollutant emissions that can cause serious acid deposition problems in distant downwind regions. (4:3.9-2)

The Issues

Acid rain is an environmental, economic and fully politicized issue. The conflicts revolve around (1) the scientific evidence and lack of it over what the causes and effects of acid rain are, (2) who is responsible for it, (3) how it should be corrected and (4) who will pay the cost of correcting it. At one pole are (1) environmentally-aware citizens of both the U.S. and Canada, as individuals, organizations and coalitions, (2) economically aggrieved interests such as the tourist, forest and commercial fishing industries, (3) the Canadian Government, and (4) some elements of state and federal agencies in the United States. The unifying thrust among these varied interests is to reduce the offending emissions at their sources.

The contrasting view is based on monetary considerations of (1) utilities, (2) coal producers, (3) railroads, (4) copper and nickel producers, (5) auto manufacturers and (6) the Department of Energy. This group, an aggregation with some acknowledged political clout, does not deny that some lakes have been rendered unproductive, but insists that there is no scientific evidence that proves what the cause of the problem is, or that clearly identifies what, if any, corrective action should be taken. In the words of the president of one midwest utility company, the reason that the United States is getting a lot of complaining from Canada about acid rain is that "...some

environmentalists in the U.S. and Canada are claiming that rain has become more acidic in the last few decades because of sulfur dioxide and nitrogen oxides appearing in emissions from power plants, particularly those in the Midwest...." His statement emphasized, however, that "... very little is really scientifically known and proven on the subject,...." and warned that any premature acid rain legislation could needlessly cost industry and consumers billions of dollars and thousands of jobs. (7:25) Acid rain is clearly a dollar issue and fish and wildlife aspects are but one part of a much larger whole.

On the other hand, Canada, a major recipient of much of the air pollution that orginates in the upper Ohio Valley and Midwest, has taken a strong position: "Canadians are unconvinced that scientific uncertainty should inevitably lead to inaction; while recognizing that there is some risk in an imperfect response, they do not want to bear the risk of a nil response." Further, "With the vast majority of scientists pointing to the relationship between emissions, pollutant loadings, and damaging acidification, the Canadian public--and the Canadian Government--are convinced that it is not premature to act. (8:4)

Similar views are voiced in the United States. The National Clean Air Coalition "maintains that the scientific understanding of this problem established a set of facts which demand immediate remedial action. (9:11) That position is shared with an official of the Joint Legislative Air and Water Pollution Control and Conservation Committee of the Commonwealth of Pennsylvania; "To say not enough is known about acid rain is to duck behind a half truth. This approach ignores the fact that decisions setting the course for the next 20 or 30 years will be made regardless of the amount of information available." (10.1) Pennsylvania is both a donor and recipient within the acid rain arena. At the federal level, the President's Committe on Health and Environmental Effects of Increased Coal Utilization earlier identified acid precipition as "...one of the two major global environmental problems, the other being increased emission of carbon dioxide with the potential effects on climate...." (3:51

The "wait-and-see" stance taken by industry is to some extent understandable, even if not acceptable to environmental advocates. The utilities industry especially has been beleagured by stringent regulations that may not always have been judiciously set or rationally administered no matter how well intended, by runaway inflation affecting fuel and transportation costs, by undercapitalization caused by extreme interest rates and a recent depressed bond market. Strong public resistance to a change-over to nuclear power generation, required conversion to oil from coal and now evidently back to coal again, plus the ever-present regulation of the rates that a utility is allowed to charge for the electricity it generates also contribute to the problem. In that kind of an historical climate it is small wonder that there is built-in resistance to the imposition of further action that would increase the cost of doing business. Meanwhile the environmental and economic costs to others because of acid rain continue to mount.

Where the American public stands on clean air and water was clarified by a Harris Survey in May, 1981. A majority of 86 percent opposed making the

Clean Air Act less strict and, by 93-4 percent, opposed easing rules governing water pollution. (11:1)

Current Corrective Efforts

A. Curtailment Action

In the United States, actions to reduce the emissions that are the main causes of acid deposition are largely confined to (1) emission restrictions on new plants, (2) prevention of significant deterioration of pristine environments (a measure that affects plant sitings rather than emissions per se) and, (3) restrictions on motor vehicle nitrogen oxide emissions, all measures required by the Clean Air Act.

In Canada, four internal actions have been initiated as called for by the Memorandum of Intent between the two nations.

(1) The single largest emitter of sulphur dioxide, the INCO smelter in Sudbury, has been hit with a non-appealable Ontario Government Order which will result in significant reduction of emissions in the next few years. The required reduction by 1983 to 1950 tons per day of sulfur dioxide represents a 70 percent cutback in emissions from the levels produced in the late 1960's.

(2) Canada's largest utility, Ontario Hydro, will reduce emissions, notwithstanding increased generation of electricity, by over 40 percent to 260,000 tons per year of SO_2 and 60,000 tons per year of nitrogen oxides by 1990. (4:3.9-28)

(3) Plans for converting oil generating plants to coal in eastern Canada are predicated on a firm policy decision that these conversions will be carried out in such a way that there will be no increase in pollution.

(4) Canada has amended (unanimously in both houses of Parliament) (8:2) its Clean Air Act so as to remove any possible doubt about its legislative capability or political willingness to provide to the United States the reciprocity called for under Section 115 of the U.S. Clear Air Act.

B. Research

In light of perceived scientific uncertainty surrounding acid rain, Congress determined in 1980 that substantial research must be conducted in that area. The Acid Precipitation Act of 1980 establishes a comprehensive research program to examine the problem under the auspices of an interagency task force. (12:15) In addition, the United States and Canada, through the Memorandum of Intent, have formed a bilateral research consulation group to investigate the transboundary long-range transport problem. (4:3.9-3)

The Environmental Protection Agency has an extensive research program in the United States that includes, among other things monitoring activities and the use of regional air quality models that provide information about the relationship between emissions in one area and air quality impacts long distances away. (4:3.9-15)

C. Current Law

Existing law does not directly address control of acid rain. Standards now in effect focus on the gaseous pollutant precursors to acid rain, sulfur dioxide and nitrogen oxides, rather than on sulfates and nitrates, the fine particles integrally involved in acid precipitation. (4:3.9-3) The secondary standards are established as ambient concentrations that are to be achieved uniformly throught the nation. Thus, they do not address regional problems because they do not effect pollution in areas distant from its source, nor take into account variations in physical conditions among regions. (4:3.9-3)

Instead, control is based on state and local conditions and jurisdictions, hence the proliferation of tall stacks that do not improve conditions distant from the source. In contrast, performance standards for new sources and the federal motor vehicle emission control programs are considered to be most significant of the federal emission standards.

State implementation plans presently provide the greatest potential for promulgation of regulations that would ease the conditions that cause acid rain. The nonattainment program, which requires emission reduction from existing sources, is the most effective existing program in alleviating problems associated with transport of pollutants. (4:2.1-69 Prevention of Significant Deterioration regulations have only an incidental effect. (6:8)

A very strong legal argument can be made for not initiating action that potentially would provide relief from acid rain. It has been pointed out that nothing in legislative history suggests an intent on the part of Congress to expand coverage (of Section 115 of the Clean Air Act) beyond the identified polluter. (12) And providing the identity of the origin of pollutants that may be hundreds of miles from the source is virtually impossible.

In the absence of specified legislative intent one court recently turned to guidance from the underlying goals and purpose of the legislation, and found that "avoiding unnecessary hardship to affected parties" was the legislative intent. That logic was extended to the interpretation that requiring reductions in emissions might work an unnecessary hardship on the affected parties, and the subsequent conclusion that only through additional studies and appropriate further legislation can the acid rain issue be addressed. (12:15) At least that is one legal assessment.

Potential Solutions

Acid rain is here to stay and the populations of Canada and the United States will continue to grow. So the problems is likely to get worse before it gets better and it will get better only if corrective action is taken. As has become traditional, however, environmental-economic-political problems that impact the public health, safety and welfare are left, by default, for Congress to solve. One can safely predict that Congressionally-mandated solutions will be less effective and more costly (because of wide variation in local conditions not provided for in language national in scope) than self-instigated remedies.

There is a contrast between the philosophy of producing the best quality product (and by-products) and that of getting by with as little effort and investment as possible. Had the utility, auto, metal, and other industries implemented pollution prevention measures in the 1920's - 40's (1980's?), there may well never have been a Clean Air Act or Clean Water Act, and the high costs resulting from them. But such was not the case and no doubt another round of Government regulation imposed on industry--in response to public demand--has begun.

Development of the political will in both Canada and the United States to support expensive abatement requirements is a necessary prerequisite to any solution. "Neither nation will agree to require costly abatement steps unless the public supports such action." (6:18)

There is no single solution to the acid rain problem, because any corrective action will be accompanied by disbenefits--economic or environmental--that will offend some interest group. Ultimately, however, the solution to acid precipitation rests in stopping release into the atmoshpere of those materials that return as acid deposits. (3:51)

(A) Physical solutions identified

1. Fuel conservation - fewer tons of coals or barrels of oil burned, but also fewer sold and transported.

2. Dispatching electricity - from power grids in a manner resulting in lowest emissions. (4:3.9-27) New plants are required to use scrubbers, hence pollute less. Utilities presently can use older, cheaper to operate plants for maximum generation, and newer, cleaner plants only for marginal generation. (6:7) Implementation would require government regulation.

3. Lower sulfur coal - use would add to transport costs, cause unemployment and revenue losses in high sulfur coal fields.

4. Coal washing - could yield 20-30 percent reduction in SO_2 emissions from eastern coal high in sulfur. One of the less expensive alternatives. (6:7)

5. Retrofitting old plants with scrubbers - requires less capital in near term than new plants, but old plants will not last as long as new ones.

6. New plants - equipped for reaction with an absorbent during combustion or with fuel gas scrubbers, (1:27) are expensive to build and to operate.

7. Plant attrition - would require 30-50 years for normal replacement of older, dirtier plants as they wear out.

8. Natural gas - piped to the northeast from Alaska is one partial solution being considered.

9. Nuclear power generation - emits neither SO_x or NO_x, but poses some cooling problems and is currently faced with a 12-15 year interval between filing of applications and generation of electricity. Anti-nuclear voices maintain that (a) not enough is known about long term, low level radiation effects on humans, and (b) nuclear waste cannot be disposed of safely.

10. Alternatives fuels - solar, salt-water electrical power generation, etc, are far into the future.

(B) Political Solutions

1. A moratorium - on the relaxation of sulfur dioxide emission limits in state implementation plans has been proposed. (13:4)

2. Stringent enforcement - of existing emission limitations in state implementation plans would result in significant reduction of sulfur dioxide emissions. (4:3.9-4) Would also be politically unlikely except under intense public pressure.

3. State implementation plans - or other state regulations could be adopted that would greatly reduce emissions. But to do so in one state and not others would be deterrent to attracting new businesses in the restricted state.

4. New EPA regulations - especially to require shorter smoke stacks, would reduce dispersal but not emissions. Might incrase prospects of providing the identity of pollutors by localizing the area affected.

5. The Endangered Species Act - could be invoked according to one assessment. (6:11) Section 7 requires that federal agencies inusre that no action which they fund or authorize "jeopardizes the continued existence of any endangered species, or threatened species, or results in the destruction or adverse modification of [the] habitat of such species." "On this basis EPA approval of state implementation plans which arguably authorize emissions contributing to acid precipitation (and the threat to endangered fish or wildlife) could be challenged. Conceivably, the Agency might be required to demand a more stringent state implementation plan that specifically addressed long-range transport concerns."

6. Amendments to the Clean Air Act - particularly Section 110 (a) (2) (E) and Section 126, could be made to strengthen provisions requiring a state to reduce emissions which affect other states. (4:2.2-1) Other measures identified include prevention of a net increase in sulfur dioxide emissions when facilities are converted to coal, and requiring a significant reduction by 1990 in the current level of sulfur dioxide emissions in the eastern United States. (4:2.2-20)

7. Financial relief - afforded in some form to corporations that either have taken in the recent past or will take in the future, corrective

action to reduce SO_x, NO_x and particulate emissions. Tax breaks, rate increases, surcharges, surtaxes, payment postponements, low-interest loans or grants to partially offset the clean-up or new construction costs that will alleviate the toxic emissions might help corporate interests overcome their feelings that not enough scientific information is available to correct the interstate and international acid rain problem.

Costs to Remedy

Acid rain has evolved from strictly an environmental issue, where a number of fish were known to have died, to an environmental/economic issue with prevention, losses and damage repair costs all being discussed in terms of billions of dollars.

The international aspects of the issue require that cost assessments not be treated from the perspective of domestic, business-as-usual environmental problems. From the Canadian view, under the "principles of cost/benefit analysis, the higher the costs of mitigating damage, the more damage is justifiable. Applied to acid rain, that would mean that the higher the costs of controlling emissions in the United States, the more damage to Canadian lakes, forests and other interests would be justified." (14:3) Of course, the same is true regarding damage incurred in the United States as a result of emissions that originate in Canada.

Transboundary pollution has also been termed "negative interstate commerce" because it artificially lowers production costs in the emitting jurisdiction while forcing costs (damage to structures, reduced forest and crop yields, tourism losses and increased local pollution control) on the receiving jurisdiction. (8:5)

The costs to reduce SO_2 emissions by 50 percent from eastern Canada have been estimated at $350 million per year and in the eastern U.S. at $5-7 billion per year. (6:19) If a standard of 2 pounds of SO_2 emitted per million Btu's was met, the cost per year by 1990 is estimated at $2.9 billion and would affect 106 power plants in Illinois, Indiana, Kentucky, Ohio, West Virginia, New York and Pennsylvania. "This would result in an increase of 1.8 percent in average utility rates in the eastern United States in 1990" with increases up to 7 percent in parts of Ohio, Kentucky and Tennessee. (4:3.9-26) Another analysis estimates that, if the dirtiest coal availabe is cleaned with the best available control technology, electricity can be generated for less than half of what it costs by importing foreign oil; full capital, operating and pollution control equipment costs included. (15:4)

Such are the costs for reducing emissions and associated acid rain. The costs of not reducing emissions are of at least equal magnitude. Some estimates that have been made include: $1.7 million per year to neutralize four million acres of farmland, $26 million per year to neutralize forest lands, and $56 million per year additional to use acid resistant paints on autos, and $4,000 to $7,000 each to restore stone or bronze monuments, all in Pennsylvania. (10:3) One source placed building erosion damage from acid

rain and other pollutants as high as $4 billion a year in the United States. (5:1)

The Canadian Environmental Minister has stated: "The effects on our forests and our lakes are, quite simply, disastrous...the potential economic impact on our forestry and fishing industry and tourism is in the billions." (5:3) Even where aquatic acidification is only partial, the accompanying high levels of metals in fish pose a health threat to those who eat the fish, and could eventually doom the sport fishing industry even in acidified areas that still support aquatic life. (13:2)

Insofar as the dollars consequences of acid rain are concerned, it appears that everyone will pay the costs or lose income or both. The only question is through what routes and for what purposes their dollars will be spent.

Emission Projections

Sulfur dioxide emissions by utilities, the largest single source in the United States, will rise from 18.6 million metric tons in 1975 to between 20.5 (with conservation and the best available controls) and 23.8 million (under existing regulations) in 1995, according to EPA predictions. (3:51) That means at least a 10 percent increase under the best of conditions and a 28 percent increase under the worst. Further into the future (after the year 2000), however, emissions are expected to begin to decline even with high levels of economic growth as new power plants come onto line. Existing plants emit 80 pounds of sulfur dioxide for every ton of coal burned, but new plants will produce on average only 12 pounds. (1:10) Conversion of 40 powerplants in the northeast from oil to coal is expected to increase SO_2 emissions from 30,000 tons per year to a total of 178,000 tons per year, by one Department of Energy estimate. (4:3.9-26)

Nitrogen oxide emissions from powerplants in the eastern United States are expected to increase from 4.4. million tons per year in 1980 to 5.4 million tons in 1990 (22 percent). (4:3.9-26) Nationally, a 50 percent increase in nitrogen oxide emissions is expected by the year 2000, (6:8) with automobiles as major contributors. The state-of-the-art of nitrogen oxides emission control has not advanced to the same extent as for sulfur oxides.

Tremendous pollutant loads have accumulated in the environment to date. Consequently, even an immediate cessation of all SO_x, NO_x and particulate emissions would not be immediately followed by dramatic, or even discernible improvements in water conditions. Some water bodies in which the threshold for acidification has not yet been reached will inevitably surpass that threshold in time. This natural lag in response time to emission reductions will almost certainly create problems in public understanding and support when detractors can point out, and correctly so, thay many dollars have been spent to reduce emissions with no immediately measurable benefits to the environment. It took a half century or more to bring the environment to its present condition and it will probably take at least that long to stablize or perhaps even improve it. Without a reduction, however, in the rate at which pollutants are being introduced, the life-reducing trend will not just continue, but can only gain momentum and intensity.

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Proposed Clean Water Act Amendments-1981

The objective of the Federal Water Pollution Control Act of 1970 (as amended) is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. It authorizes research and training, grants for construction of water treatment works, sets water quality standards and enforcement procedures, and provides for issuance of permits and licenses. The Administrator of the Environmental Protection Agency has primary responsibility for administration of the Act.

One goal of the Act as now constituted is to, wherever attainable, achieve water quality by July 1, 1983, that provides for the protection and propagation of fish, shellfish and wildlife and provides for recreation in and on the water. It is the policy of Congress that the States manage the construction grant program under this Act and implement the permit provisions of Sections 402 and 404 of the legislation. Until a state meets the criteria established and the EPA and Corps of Engineers responsibilities for the 404 permit program are transferred to the state, the Corps maintains responsibilities for carrying out the 404 program in the field.

A common notion expressed to, and by, members of Congress is that Section 404 of the Clean Water Act is the cause of needless delays in construction projects and should, therefore, be amended. There can be no doubt that sentiment is strong among many individuals to change the law and accelerate development. Two bills that have been introduced this year to do that are S. 777, by Senators Tower and Bentsen, and H.R. 393 by Congressman Paul.

Purpose

These bills are intended to reduce federal regulation, clarify agency responsibilities, and eliminate delays in permitting dredge and fill operations so that necessary energy development, port facilities construction and other projects of a related nature can proceed. The sponsors feel that the federal agencies' interpretation of the program has gone far beyond the intent of Congress (court decisions especially have expanded agency jurisdiction under the Clean Water Act).

Content

The bills limit federal dredge and fill jurisdiction to navigable (Phase I) waters (current jurisdiction includes Phase II and III waters); provide that the Corps of Engineers shall be required to show cause why a permit for a disposal site should not be granted (current law requires the applicant to show why the permit should be granted) stipulates (in S. 777 only) that all persons, including federal agencies, are required to comply with state and wetland or waterway alteration programs with the exception of the Corps of Engineers in the course of its activities to maintain navigation.

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November, 1981

The bills also specify that all other Acts of Congress (e.g. Section 10 of the 1899 River and Harbor Act, Fish and Wildlife Coordination Act, Endangered Species Act, Coastal Zone Management Act, etc.) shall not prohibit or restrict the discharge of dredged or fill material into non-navigable waters, historically navigable waters, or onto the banks of navigable waters. The authority of states to assume Section 404 permitting authority from the Corps of Engineers is deleted, and the option of the states is limited to the Governor, with the concurrence of the legislature in that state, requesting that the Corps of Engineers administer the Section 404 program on specific non-navigable waters selected by the state (there is no provision for the Corps to decline).

Consequences

If either of the subject bills is enacted, any developer could proceed with dredge and fill activities at will and in any manner on most inland streams, lakes, and wetlands, subject only to any state regulations that may exist. Most of those adjacent to currently navigable waterways, but above the ordinary high water mark, would not be under any federal regulation or protection. The opportunities most states now have to influence federal agency decisions on the management of non-navigable waters (i.e., the water quality certification process under Section 307 of the Coastal Zone Management Act) would be eliminated.

Alternatives to Legislation

Administrative remedies now being applied to the problems proposed to be addressed by S. 777 and H.R. 393 include:

1. General permits-allow specified activities which have minimal adverse impacts to proceed without an individual permit.

There are several potential second stage consequences (which would result from stream blockage) of implementation of the provisions of S. 777, resulting from a damming, the discharge of pollutants or sediment into unprotected waters, or any combination of the three. Included are: a) reduced water volume reaching navigable water, (e.g. reduced freshwater inflows to estuaries, thereby increasing salinity and restructuring environmental conditions for living resources) b) higher concentration of pollutants in the reduced volume of water, thus causing tighter restrictions on the issuance of discharge permits downstream, and c) the formation of shoals in navigable waters caused by indiscriminate dumping of dredged material in unprotected waters.

Citizens in different states and even within the same state would be subject to different regulations and dredge and fill standards, depending on the location of the project site and whether it was a) above or below the water line of Corps jurisdiction, b) inside or outside an area for which the state had requested Corps regulation, or c) affected by separate state regulations.

2. Standarized methodology-to identify when permits are and are not needed is being developed by the Corps of Engineers, with FWS and EPA input. Section 404 jurisdictional conflicts between agencies should be eliminated (currently the EPA has the final call).

3. Strict time limits-imposed by interagency Memoranda of Agreement have

reduced application processing time.

4. Simultaneous processing of applications-at periodic interagency meetings has reduced processing time and improved interagency coordination.

5. Pre-filing guidance-is provided to developers to expedite the application preparation and review process. Scoping sessions could help to expedite evaluations of data on sites covered by applications.

6. Federal assistance is being provided to states that wish to assume full 404 program responsibilities.

7. Handbooks of best management practices-are being developed to help developers qualify for expemption from the Section 404 process.

Action on amendments to the construction grants program (Title II of the Clean Water Act) could affect the content of Section 404. Even though no hearings have been scheduled that pertain to Section 404, amendments could be offered on the floor of either the House or Senate at the time the construction grants program amendments are considered. Hearings have been held in the Senate on construction grants but the Environment and Public Works Committee has not yet been asked to vote on a marked-up version. If no attempt is made to amend Section 404 from the floor, then it would be considered in depth in 1982 when the Clean Water Act is slated for reauthorization.

The construction grants program amendments pep se have implications for the welfare of fishery and other living resources. The Administration amendment (S. 975 introduced by request by Senator Chafee) and his own amendment (S. 1274) introduced for himself (both are co-sponsored by Senator Stafford and Senator Randolph) are similar in thrust. Mr. Chafee has spoken in objection to the provisions in the administration bill for "the total elimination of eligibility for Federal funding of the control and treatment of combined [sanitary and storm] sewer overflows," and to the repeal of "the [EPA] administrator's authority to reimburse states and localities that move forward with projects of their own in order to get a jump on inflation."

Even though the amount of federal support for wastewater treatment would be reduced under both amendments, other provisions (in S. 1274 particularly) should result in a net environmental gain. For example, construction time is expected to be cut about in half (currently it averages 9 years) by reducing EPA involvement in intermediate local decision making. Also, Federal funding of sewer line construction into open areas for future development of subdivisions and shopping centers would be discontinued, and construction priorities would be set on the basis of the greatest significant benefit on water quality, rather than following the current practice of giving priority consideration on the basis of construction schedules. Another significant feature provides "discretionary authority for the EPA administrator to deal with the problem of combined storm and sanitary sewer overflows into ecologically critical bays and estuaries that will not otherwise be cleaned up by traditional treatment".

The outlook

Unfortunately the message that Congress is receiving now is that Section 404 requirements are an obstruction to progress. Those instances where public and private developers have had favorable rather than unfavorable experience with Section 404 administration have not been made known in Congress or to the Reagan administration, particularly by the developers themselves. Nor has a quantitative accounting of environmental benefits of the 404 program to date been conveyed to Congress or the Administration. Such a statement is being prepared by the Corps working in conjunction with other Federal agencies. It should become available late in 1981.

In the absence of repeated and target-specific disclosures of the positive side of Section 404, and the actions that have been taken to remedy negative aspects of its implementation substantial curtailment in the habitat protection that it affords is a strong probability in 1981 or 1982.