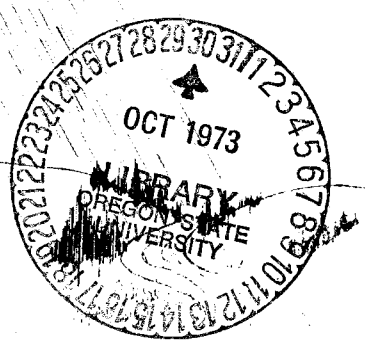

Oregon's Environment

OREGON STATE UNIVERSITY

October 1973

Number 13

THE FEDERAL WATER POLLUTION CONTROL ACT AMENDMENTS OF 1972

Background: This is the most comprehensive program ever enacted to prevent, reduce, and eventually eliminate water pollution. The two general goals of the Act are: to achieve wherever possible by July 1, 1983, water that is clean enough for recreational uses and for the protection of aquatic life; and by 1985 to have no discharges of pollutants into the nation's waters. The law extends the federal program to all U.S. waters, not just interstate waters. The states must submit intrastate water quality plans to the Environmental Protection Agency (EPA) for approval or revision. While the states retain primary responsibility to prevent, reduce, and eliminate water pollution they must now do so within the framework of a new national program.

Major Points of the Act: It sets forth guidelines for the control of industrial and municipal water pollution, expands water quality standards, establishes a new system of permits for discharges into the nation's waters, and creates stringent enforcement machinery and heavier penalties for violations.

Provisions:

-- Existing industries discharging pollutants must use the "best practicable" water pollution control technology by July 1, 1977, and the "best available technology economically achievable," as defined by EPA, by July, 1983.

-- New sources of industrial pollution must use the "best available demonstrated control technology," as defined by EPA, by May, 1974.

-- EPA will issue effluent standards for discharges of toxic pollutants no later than January, 1974. Also, discharge of any radiological, chemical or biological warfare materials, or high-level radioactive waste is prohibited.

-- Federal construction grants of up to $18 billion are authorized over the next three years to help local governments build needed sewage treatment facilities.

-- An Environmental Financing Authority is created to help state and local governments raise their share (25%) of the cost of treatment facilities.

-- If a state finds that "best practicable" or "best available" controls are not adequate to meet water quality standards, more stringent controls must be imposed. To this end, the states must establish the total maximum daily load of pollutants that will not impair aquatic life.

-- No discharge of any pollutant is permitted without a permit, and publicly owned sewage treatment plants and municipally controlled discharge plants as well as industrial dischargers must obtain permits.

-- A state's permit program is subject to revocation by EPA, after a public hearing, if the state fails to implement the law adequately.

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-- EPA has emergency power to seek an immediate court injunction to stop water pollution that poses a threat to public health or endangers someone's livelihood.

-- Penalties for violating the Act range from $2,500 to $25,000 per day and up to one year in prison for a first offense, and up to $50,000 a day and two years in prison for subsequent violations.

-- Any citizen whose interests may be adversely affected has the right to take court action against anyone violating an effluent standard or limitation.

-- A national surveillance system to monitor water quality will be established by EPA in cooperation with other federal agencies, and state and local governments.

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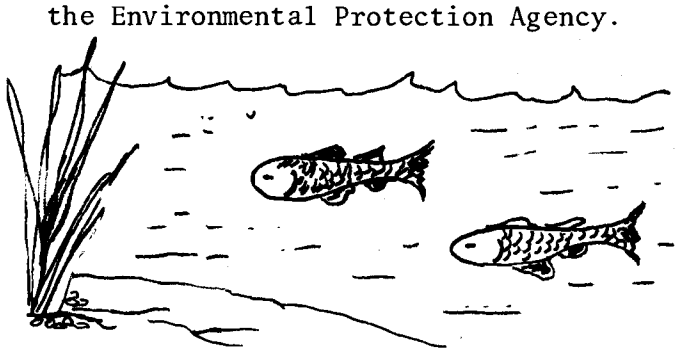
EPA SETS UP EMERGENCY REPORTING NUMBER

The Region 10 office of the EPA has set up a system for after-hours notification of environmental emergencies. Anyone who sees or knows of an environmental emergency can now call the EPA number in Seattle(206) 442-1200, and give their information to the operator who will in turn notify a member of EPA's Environmental Emergency Section. A staff member from the Environmental Emergency Section will be on call after hours and on weekends to respond to any emergency notification.

Examples of "environmental emergencies" that EPA should be notifed of include: Oil spills; Hazardous chemical spills, such as chlorine, ammonia, industrial acids, etc.; Sewage treatment plant breakdown; Unexplained fish kills; Accidents involving pesticides; Floods or other natural disasters that affect water supplies and sewage treatment.

EPA is encouraging all federal, state and local agencies to use the after-hours number, and hopes that all other interested persons and groups will also use the service when appropriate.

The Oregon State Game Commission has received a $108,675 grant for a project entitled "Effect of Copper and Zinc on Seawater Adaptation of Juvenile Coho Salmon". The research funds will come from the Environmental Protection Agency.



RECYCLING IN PULP MILLS

Twin mills, side by side at Toledo, Oregon, will use the same water in some of their operations to help meet the environmental regulations. Georgia-Pacific Corp. is building a $15 million pulp mill alongside an existing plant, with completion scheduled for mid-1974.

The new facility will utilize the kraft pulping process to digest chips made from formerly wasted lumber and plywood plant scraps. A portion of the existing mill's kraft pulping liquor will be piped into the new mill and the resulting pulp will be used for making corrugating medium (the fluted center portion of shipping containers). The already recycled waste pulping liquor from the new mill will be evaporated to recover chemicals, then returned to the kraft mill to be used again in the recycling system.

Effluent recycling is only one part of the pollution control and timber utilization program involved. A continuous digester, now being built for the modified kraft operation, will have other unusual features in addition to chips made from formerly wasted wood scraps. Its basic diet will be alder waste from both manufacturing processes and logging slash.

Alder is gaining industrial importance in western Oregon. This benefits forest management in that some lands more suited for Douglas fir now can be cleared of precommercial alder trees, with a return to pay for the labor. Some alder for the new pulpmill operation will be harvested on company lands, while other logs will be purchased, thus creating a new market for currently wasted timber and providing additional payrolls.

FISH CULTURAL ACTIVITIES

Research conducted in Utah indicates that fish hatchery activities can be a source of pollution downstream.

Over 600 state and federal fish cultural stations are currently operating in the U.S. These hatcheries produce a minimum of 12 million pounds of trout annually. They utilize each year more than 41 million pounds of fish food of which almost 23 million pounds are offal, meats, fish and other organic material. The remaining 18 million pounds of feed are commercially prepared pellets or other dry feeds. If accurate data were available for private fish cultural enterprises, these totals would be increased substantially.

The pollution potential of such a large fish cultural program could have a decided effect on the quality of water receiving hatchery effluents. It is generally believed that, except in rare cases, fish cultural waste waters are unlikely to cause major immediate pollution problems. Chronic effects on smaller receiving waters, however, have received less attention and are little understood. Recent surveys in Utah associated with efforts to arrive at stream classification have indicated that pollution from this source is a possibility. Some deterioration of stream and reservoir habitat, with resultant impact on the fishery resources, are now suspected of having occurred as a result of long term release of hatchery effluents into these waters.

A program of semi-monthly physical-chemical analysis was conducted for a year at six trout hatcheries. These determinations were taken at the hatchery inflow and outfall, the receiving water above and below the hatchery outfall.

Bottom fauna was sampled once a month during the summer and bi-monthly through the winter on selected stations in the receiving waters. Flow data was recorded for the influent, effluent, and receiving waters. There was no correlation between the pounds of food fed in the hatcheries and either changes of chemical quality in the receiving waters, or changes in kinds and numbers of bottom fauna organisms in the receiving waters.

The analysis of samples revealed degradation of the water quality through every hatchery and in the receiving water. This degradation was beneficial from a fisheries standpoint but water quality and public health considerations may require cleanup before acceptable levels could be achieved. (From "Pollution as a Result of Fish Cultural Activities", EPA-R3-73-009, February 1973, EPA, Wash., D.C.)

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SEALING EFFECTS IN IRRIGATION CANALS

Natural sealing effects observed in irrigation canals and reservoirs can be the result of sedimentation, soil-water chemical effects, or microbiological activity. The contribution of each of these phenomenon depends on the soil type, chemical composition of infiltrating water and the environment in the benthic area of the canal or reservoir, according to a study conducted at the University of Idaho.

The magnitude of the sediment contribution to decreased seepage depends on the relationship of sediment size to soil pore size. Penetration of sediment into the soil matrix is necessary in order to obtain a permanent change in permeability that will remain effective over several seasons of use. The proper sizes of artificial sediments to effect maximum retention can be evaluated by laboratory measurements of hydraulic conductivity from which the amount of sediment retained within the matrix can be calculated.

The potential for hydraulic conductivity reduction due to the chemical interaction between the soil and water can be estimated. The procedure, based on the clay content of the soil and laboratory permeability tests, will allow the estimation of final conductivity values if the cation content of the irrigation water is known. The role of microorganisms active in the impeding layer can be significant under certain conditions.

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Laboratory tests show that sizeable reductions in permeability of sands attributed to bacteria growth do not occur until the number of bacteria exceeds 400,000 per gram.

Field tests indicate that seepage rates can decrease rapidly to 50% or less of the early season values when sufficient reduction in conductivity of the impeding layer occurs to cause partially saturated flow beneath the canal.

The predominant cause of long term decreases in seepage rates of canals in the Portneuf silt-loam soil is sediment buildup on the canal bottom. Formation of the sediment layer with accompanying increases in organic matter content provides an environmend conducive to microbiological growth. Seasonal changes in seepage rates are caused primarily by microbiological activity in the impeding layer. Physical dispersion likely contributes to initial decreases in conductivity of disturbed soils after canal construction. (From "Investigation of Natural Sealing Effects in Irrigation Canals". Completion Report Project A-023-IDA. June 1973).

CONSTRUCTION GUIDELINES: Publication of guidelines for the construction of water resources development projects has been announced by the Bureau of Reclamation. "Environmental Guidebook for Construction" is designed to assist those concerned with everyday problems of construction and to help them gain a clearer concept of what environmentalists are seeking as it relates to their work. Specific suggestions are made about burning trash, disposing of liquid wastes, noise control, and protection of the natural trees and rocks, etc. Only limited supplies of the booklet are available. Requests should be sent to the Bureau of Reclamation, U.S. Dept. of the Interior, 19th and C Streets, N.W., Washington, D.C. 20240.
