APRIL 1972

EPA bulletin

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Proposed Bill Would Regulate Pesticide Use

A proposed Federal Environmental Pesticide Control Act (H.R. 10729), the subject of recent Senate hearings, would greatly extend Federal control over pesticides. The legislation, which has been passed by the House, is a revised version of an Administration measure originally introduced as S. 745 and H.R. 4152 in February 1971.

The bill's key feature is the power it would give the Federal government, as administered by EPA, to regulate the *use* of pesticides. Present Federal authority in this field under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) is confined to regulation of pesticides in inter-State commerce through registration requirements. These include regulation of labeling and content of pesticide products, but do not involve control of the application of a pesticide once the user buys it.

H.R. 10729 continues the present registration authorities of FIFRA and, in addition, requires a use classification, specifying that a pesticide is either for "general use" or "restricted use".

A general-use pesticide is one which, when applied in accordance with its directions for use and any warning or caution statements, will not cause substantial adverse effects to the environment, including any injury to man. Such a pesticide would be subject to essentially the same requirements that all pesticides must now meet under FIFRA.

A restricted-use pesticide is one which the EPA administrator determines could cause substantial adverse effects on the environment without additional regulatory restrictions, even when used as directed on the label. If its effects pose an immediate threat to human health or safety or environmental values, the bill provides that the pesticide must be applied by or under the direct supervision of a certified pesticide applicator. If, however, its effects are long-range due to such characteristics as persistence and mobility in the environment and accumulation in the food chain, the restricted-use pesticide would be subject, under the bill, to the certified applicator-requirement or "such other restrictions as the Administrator may determine". These restrictions may include requiring a user to sign a pesticide register; or, to certify that he has read the instructions for application and will comply with them; or it may require him to obtain a license or permit.

Certification of pesticide applicators, to qualify them to use restricted-use pesticides, is a function of the States under the bill. Certification must be in accordance with a State plan approved by EPA, and carried out by a designated State agency. The bill provides for Federal assistance to the States in the form of contracts and other cooperative agreements to encourage applicator training.

Another important feature of the legislation is the authority it would give to the Federal government to establish standards for pesticide packaging and containers and disposal of these containers as well as disposal of pesticides. Disposal is presently one of the most significant sources of pesticide pollution.

Although EPA generally supports the provisions of H.R. 10729, several features of the bill met with Agency objection at the Senate hearings. The most controversial of these, opposed by EPA, is a provision allowing indemnification of persons suffering losses by ownership of a pesticide for which registration is suspended and finally cancelled.

New legislation now pending in the Senate would extend Federal authority over the use of pesticides as well as over their manufacture and sale.

UN Conference on Human Environment Set for June

An estimated 1,500 delegates, representing most of the member countries of the United Nations, will meet at Stockholm, Sweden, June 5-16 to consider some of the physical and social problems caused by technology and population pressures throughout the world.

Known as the UN Conference on the Human Environment, the meeting will be action-oriented; it is expected to draft several international agreements dealing with environmental problems that are amenable to international control. In addition, participants will lay the groundwork for future worldwide cooperation in pollution control and other aspects of the problem—possibly by recommending creation of a permanent UN office and advisory body for governmental matters.

Last month, President Nixon announced a major proposal that the United States delegation will carry to the Stockholm Conference: establishment of a voluntary United Nations Fund for the Environment, with an initial funding goal of $100 million for the first five years. If such a fund is established, the President will recommend to Congress that the United States commit itself to provide its fair share of the fund on a matching basis.

The President said that "This fund would help to stimulate international cooperation on environmental problems by supporting a centralized coordination point for UN activities in this field. It would also help to bring new resources to bear on the increasing number of worldwide problems through activities such as monitoring and cleanup of the oceans and atmosphere."

The current U.S. view is that new machinery will be required within the UN to coordinate the array of environmental activities of the UN system and to administer the Environmental Fund, if the President's proposal is accepted.

As to the nature of this machinery, there is a general concensus that a new specialized agency should not be created. One arrangement being discussed at the UN and among member governments is the creation of a small, high-level staff unit and an intergovernmental body to give the unit policy direction.

The U.S. shares the general view that international efforts should serve two kinds of purposes:
First, they should deal with inherently international environmental needs such as global monitoring of human health, the oceans, the atmosphere and terrestrial environment; research, and assessments of the condition of the world environment.

Second, they should serve to strengthen national capabilities in the environmental field through education and training, information exchange and programs on a regional basis—thus enabling national and local authorities to draw on the knowledge, experience and organizational and technological capacities of the international community. The U.S. contribution to the proposed fund would be predicated on its use for such purposes, rather than to solve specific problems within the borders of individual countries.

COMMUNITY CUTS COSTS OF SOLID WASTE COLLECTION

By applying certain rules-of-thumb in designing solid waste collection routes, the city of Huntington Woods, Mich., has increased its collection system efficiency and reduced tax assessments for this service.

The city's property tax rate of $16.05 per $1,000 assessed valuation for 1972 provides $1.75 for solid waste services, contrasted with $2.06 for the same service in 1971. The total collection cost is projected to drop from $86,500 to $70,000, despite an anticipated 17 percent increase in waste disposal charges and wage increases.

Huntington Woods (pop. 8,500) took the initial steps to reduce solid waste collection costs in January 1971. Crews were reduced from three to two men for each of the city's two packer trucks.

Further economies were realized from August 1971 to January 1972 by replacing one of the trucks with a one-man collection vehicle. City officials, with technical advice and assistance from EPA's Office of Solid Waste Management Programs, became convinced collection costs could be still further reduced by making maximum use of the one-man vehicle. Since January, a single, one-man vehicle making approximately 500 services each day has been used.

In designing routes for the one-man vehicle, five general rules were observed as closely as possible:

1. Routes should not be fragmented or overlapping; they should be in contiguous and clustered street segments.
2. Heavily traveled streets should not be collected in rush hours.
3. Left-hand turns are generally more difficult and time-consuming to perform than right-hand turns and should, therefore, be minimized.
4. Total collection and haul time should be reasonably constant for each route in the community.
5. Design of the collection route should be started as close to the garage or motor pool as feasible.

For further information concerning design of solid waste collection routes write to: Systems Management Division, Office of Solid Waste Management Programs, U.S. Environmental Protection Agency, Cincinnati, Ohio 45268.

rerouting: economy & efficiency

NEW METHOD DEVELOPED TO PREDICT URBAN CO CONCENTRATIONS

A mathematical model which permits city planners to forecast carbon monoxide concentrations and foresee their effect on proposed projects in metropolitan areas has been developed by scientists at Stanford Research Institute with the financial support of EPA.

The computer model is significant because it provides a greatly improved method of predicting the impact of motor vehicle traffic on air pollution. A city planning a greenbelt or an industrial park or a downtown skyscraper or a belt parkway can predetermine how each will alter carbon monoxide concentration.

"Suppose a city wants to convert a main thoroughfare to one-way traffic," says R. T. H. Collis, director of the Atmospheric Science Laboratory at Stanford. "Now we can actually determine what sort of pollution such a change might brew during morning and evening rush hours before the step is taken. The mathematical model shows inter-relationships and simulates actual conditions."

Model Accuracy Tested

Accuracy of the model, which will be available shortly, has already been established through exhaustive tests in St. Louis, Mo. and San Jose, Calif. Results indicate that carbon monoxide concentrations can be calculated within 3 parts per million of actual conditions in large and medium-sized cities.

Other broad applications are expected. The model will help city planners, for example, comply with amendments to the Clean Air Act of 1970 which are to be effected by 1975. Recent air quality standards set maximum street level concentrations, and planners may have to revise traffic patterns and build new routes as a consequence. The model will let them simulate various options before selecting the best alternative.

It should also prove helpful to highway planners in filing environmental impact statements, since, until now there has been no reliable method of predicting the effect of interstate highways, freeways, expressways and thruways on carbon monoxide concentrations.

Model calculations are based on readily available information; expensive city-wide monitoring stations to measure concentrations will not have to be installed and maintained. According to Mr. Collis "the model can be used by any city that has access to conventional airport weather observations; emissions data comes from traffic studies which highway planners conduct as a matter of routine".

Mr. Collis points out the main reason for the model's accuracy is that it takes into account street canyons—that is, the movement of air masses between large buildings in the downtown areas of major cities. This is important because canyons affect city-wide concentrations and distribution of pollutants and, it is amid busy city streets that pedestrians are exposed to the largest concentrations of carbon monoxide.

Studies showed that roof-top winds are significant in determining carbon monoxide concentrations at street level—the faster the winds whip across the tops of buildings, the lower the concentration in the street.

Further, when the winds blow at right angles to the street, a circular (or helical) air flow pattern develops between the buildings (see illustration). The air flows downward on one side of the street and upward on the other. Researchers found that concentrations on the "upwind" side are often twice as heavy as those on the "downwind" side.

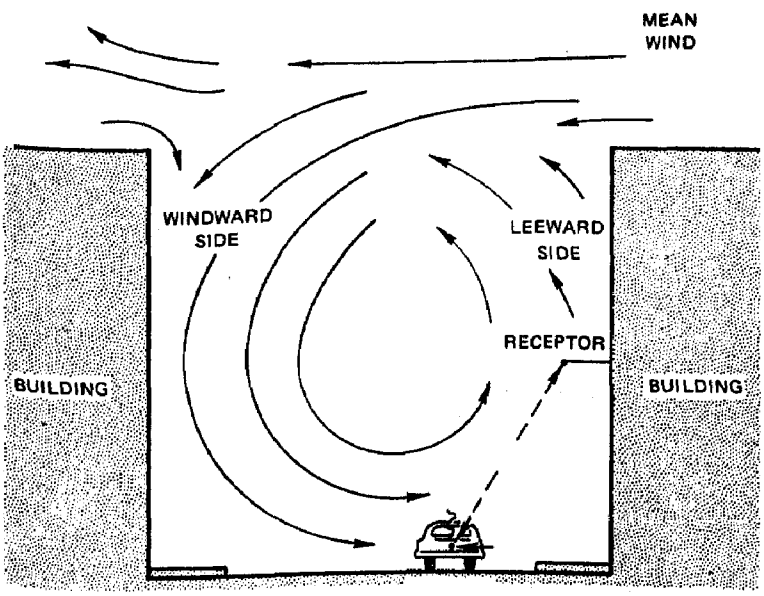
Research also revealed that there is very little variation in front of "downwind" buildings from street level to rooftop, but concentrations do vary with height in front of the "upwind" buildings.

CO Concentrations Measured

The model can be used to calculate carbon monoxide concentrations in two ways: (1) to predict hourly concentrations for a grid of points throughout the city—for example, a planner may want to know how much carbon monoxide will concentrate at selected spots in the city at noon on a certain day; (2) to determine how often a specific concentration occurs at a selected point—planners want to know how often concentrations of, say, 10 parts per million occur at a busy downtown intersection, the answer can be computed from climatological data.

Carbon monoxide was chosen for this study because it is a relatively inert gas that does not react chemically with other substances in the atmosphere. However, future studies are planned to accurately calculate the concentration of any pollutant at virtually any point in any city, provided meteorological and emission sources are known.

For additional information on this mathematical model contact: Dr. Aubrey P. Altchuller, Director, Division of Chemistry and Physics, National Environmental Research Center, EPA, Research Triangle Park, North Carolina 27701.



When winds blow at right angles to the street a helical air pattern develops. Ambient levels of carbon monoxide are measured by the receptor.

SPOTLIGHT ON RESEARCH:

Clean Water and The Steel Industry

Industrial process wastes often present a difficult disposal problem because of their hazardous or toxic qualities and because they occur in large quantities.

An example is acid rinse water waste which results from steel production; it is a serious contributor to steam and groundwater pollution.

A project to develop a means to treat large quantities of this acid rinse water sufficiently to allow its discharge into nearby waterways was undertaken by Armco Steel Corporation with a grant from the Federal government.

Armco decided to modernize and expand its plant facilities in Middletown, O. in 1968. Included among other improvements was a new hot strip mill. Since it was to be a completely new facility, every effort was made to incorporate the best available pollution-control technology into its construction. The government, through its water pollution control agency (now incorporated in EPA) made a $547,500 grant to Armco to demonstrate and evaluate a method of effective treatment of acid wastes, Armco financed the larger share of the $1,784,000 project.

In steel production, an oxide coating (mill scale) forms on low carbon steel. This is removed by a "pickling" process which involves use of a dilute hydrochloric or sulfuric acid. Armco's two pickling lines produce 6,000 gallons per hour of hydrochloric waste "pickle liquor". In operation, two different waste streams result: spent acid from the pickling baths known in the industry as "pickle liquor" and once-through rinse water.

The project's goal was to develop means to treat the large quantity of acid rinse water sufficiently to allow its discharge to the nearby Miami River. This process necessarily involves neutralization of the acid, and removal of the iron content.

Armco research scientists had developed an experimental treatment process utililizing limestone neutralization along with aeration and sludge recirculation to oxidize ferrous iron and produce a readily filterable precipitate. The Federal grant to Armco allowed development of the process to pilot-scale, followed by design and construction of a full-scale treatment plant.

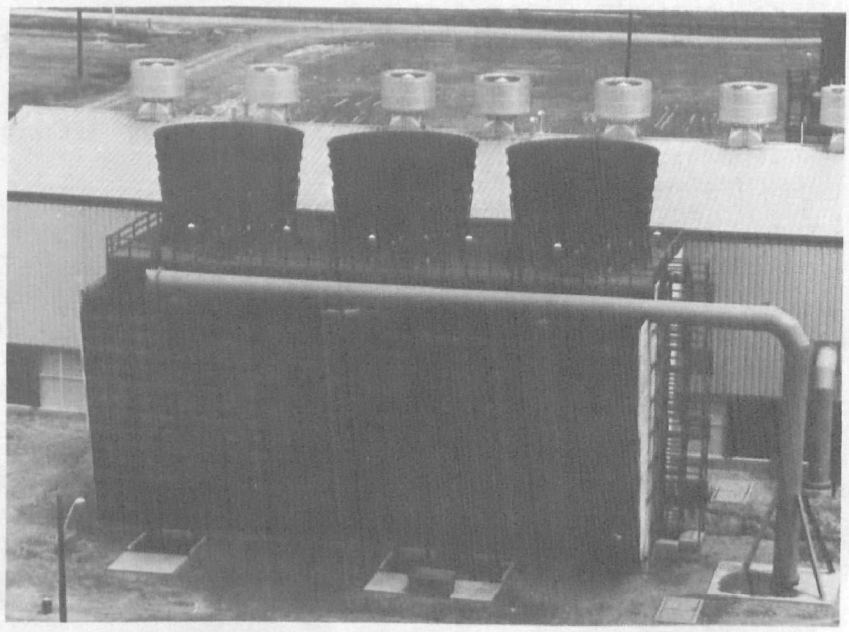
In the treatment plant, acid rinse water received at a maximum of 1,500 gpm is collected in one of two 12,000 gallon tanks, one adjacent to each pickling line. The water then passes through a surge tank to an aeration-mix tank where limestone is added and air is blown through to effect oxidation. This neutralizes the free acid and reacts with iron compounds to allow flocculation and agglomeration into a readily seattleable mass which subsequently is separated in a clarifier. The clarifier effluent then flows into a 16-acre lagoon before final discharge into the nearby river.

Sludge collected in the clarifier is conveyed to vacuum filters for dewatering. The filter cake is collected in gondola cars and hauled away for storage. Clarifier sludge is also recirculated to the aeration-mix tank to enhance sludge settling characteristics.

An aerial view of the Armco plant shows water clarification system, including six 135-foot-diameter clarifiers (left, center). These receive wastewater effluent after heavier impurities are removed in the building between the rows of clarifiers. Note steam rising from cooling towers (right).

For additional information concerning this project, write to: Paul Minor, Technology Transfer, U.S. Environmental Protection Agency, Washington, D.C. 20460.

After acid rinse water effluent has been cleansed it is cooled in these towers and reused several times within the plant before final discharge.



TRAINING COURSES AVAILABLE IN WATER POLLUTION TECHNOLOGY

The most advanced water pollution control equipment and technology are worth very little without skilled and competent managers and technicians working in the field.

This is the reason for EPA's extensive training program designed to assist State and local agency personnel to develop and maintain technical skills needed to achieve water pollution abatement goals.

Nearly 1,500 students annually attend courses in water pollution technology given at EPA's National Training Center in Cincinnati, O., and at EPA laboratories in Ada, Okla.; Athens, Ga.; Corvallis, Ore., and Edison, N.J.

Courses are offered for a variety of disciplines, including engineers, chemists, biologists, statisticians and administrators. They are designed to achieve rapid application of new research findings; update skills of technical and professional personnel, and prepare new employees in the special skills required in the EPA water program. Increasing attention is being given to development of special courses providing an overview of the nature, causes, prevention and control of water pollution.

The largest training center, at Cincinnati, has a professional staff of 20; however, scientists, engineers, and recognized authorities from other Agency programs, other government agencies, universities, and industry supplement the training staff as guest lecturers.

Most courses last one or two weeks. Subject matter includes selected practical features of plant operation and design and water quality evaluation in field and laboratory. Specialized aspects and recent developments in sanitary engineering, chemistry, aquatic biology, microbiology and field and laboratory techniques not generally available elsewhere, are also included.

Students participate in classroom presentations, demonstrations and panel discussions. Field trips are conducted to local sites representative of the region in which the course is given, giving students an opportunity to engage in observations and tests widely used by chemists, aquatic biologists and engineers in on-site studies. Students may collect samples for subsequent laboratory study and perform representative studies in the laboratory.

To further support the role and responsibility of the States in training wastewater treatment plant operators, EPA training program staff members will provide assistance in planning State operator-training courses. States may request EPA instructors to serve as guest lecturers, or they may request the loan of instructional materials such as lesson plans and visual training aids. These aids, including training manuals, may be reproduced freely by the States for their own training programs.

For more information concerning EPA's training program, including the "Bulletin of Courses", (indicating all course offerings) write to:

Environmental Protection Agency
Office of Water Programs
National Training Center
4676 Columbia Parkway
Cincinnati, Ohio 45226

NEW FILM AVAILABLE

"Dry Limestone Injection Process", 26 minutes, 16-mm, sound, color, 1971. A progress report on a project to control sulfur oxide emissions from plant facilities using coal for fuel. It presents test procedures, methods of evaluation, and the results obtained by injection of dry limestone into coal-fired boilers. Although not conclusive, the filmed report is useful for technically-trained audiences, including persons responsible for evaluating air pollution control processes or those having general interest in air pollution activities.

Available on a free loan basis from:

National Audiovisual Center
N.A.R.S., USA
Washington, D.C. 20409

To purchase, send $103.75 to the above address, Attn: Sales. Remittance may be by check or money order payable to General Services Administration. Refer to Order No. TF-115.

COMMITTEE NAMED TO REVIEW DRINKING WATER STANDARDS

An Advisory Committee on the Revision and Application of Drinking Water Standards will provide EPA with independent scientific and policy guidance on issues pertaining to drinking water standards including needed research and monitoring activities.

Authority to set such standards was assumed by EPA with creation of the Agency in December 1970. Since the standards were last revised in 1962, their adequacy has been questioned by reports of mercury contamination of major waterways and the introduction of many new products, including pesticides, herbicides, radioisotopes and various process chemicals.

The Committee met in January and again in February and it is anticipated recommendations for the new standards will be submitted to EPA within the next few months.

Henry Ongerth of California serves as Committee Chairman and William Long, Deputy Director of EPA's Water Supply Programs Division, is Executive Secretary.

RECENT PUBLICATIONS

Single copies of all publications listed below are distributed without charge to representatives of State and local agencies. Address requests in writing to:

U.S. Environmental Protection Agency
Office of Public Affairs
Public Inquiries Branch
Washington, D.C. 20460

Requests for multiple copies will be considered on an individual basis. Prices are given for publications available from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402.

Solid Waste Management: A List of Available Literature, January 1972. Lists publications in the solid waste field that have been collected or published as directed by the Solid Waste Disposal Act of 1965. Arranged by categories: activities of the Federal solid waste management program; bibliographies on solid waste management; citizen action and general information; collection of solid wastes; composition and analysis of solid wastes; land disposal; management, planning and economics; marine disposal; recycling and reclamation; solid waste processing; studies related to specific solid wastes; surveys, grants, contracts and demonstration programs. Includes publication order forms. 33pp.

Agricultural Benefits and Environmental Changes Resulting from the Use of Digested Sewage Sludge on Field Crops. Results of the first year of a project conducted by the Metropolitan Sanitary District of Greater Chicago, to demonstrate the possible agricultural benefits and environmental changes that result from applying digested sewage sludge to field crops. Describes an experimental facility established at Elwood, Illinois to evaluate the long-term effects on the soil-water-crop ecosystem of sludge disposal on land. Criteria are developed that can be used in selecting sites for this method of sludge disposal. 61pp.

Mixing Heights, Wind Speeds, and Potential for Urban Air Pollution Throughout the Contiguous United States. A study based upon regular measurements of temperature and winds aloft at 62 national weather service stations. A model of some general features of atmospheric dispersion is described, in which the pollutant concentration averaged over a city is a function of mixing height, wind, speed and city size (distance the wind travels across the city). 118pp. $1.25.

Advanced Wastewater Treatment as Practiced at South Tahoe. Presents the results from three years' operation of a 715 mgd advanced wastewater treatment plant at the South Tahoe Public Utility District in South Lake Tahoe, Calif. Two principal purposes of the project were to evaluate the recovery and reuse of lime as a coagulant in tertiary treatment and to investigate ammonia stripping as means for nitrogen removal from tertiary effluent. The work also includes a comprehensive study of the efficacy, reliability, and economy of a tertiary sequence of treatment consisting of conventional activated sludge, followed by lime treatment for phosphate removal, ammonia stripping, two-stage recarbonation, mixed media filtration, granular activated carbon adsorption of dissolved organics, and chlorination. 436pp. $3.25.

GPO 930-184

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