A new process for making glycol from syngas
Union Carbide and Ube Industries (Tokyo) have signed an agreement for the joint development of a process to make ethylene glycol from synthesis gas. Both companies are running pilot plants and Carbide says that it expects the new route to be commercialized in the expansion round that will follow its current building plans in Alberta, Canada. Ube has built the first commercial plant to make oxalic acid from synthesis gas. And the technology under development now is related to that. The syngas will be converted into oxalates, presumably dialkyl oxalates, which will be hydrogenated at low pressure and low temperature to ethylene glycol. Carbide has been working for some time on a different approach to ethylene glycol from synthesis gas that employs a rhodium-complex catalyst. But it requires high pressures, and the company's patents indicate that the process also turns out large amounts of methanol. The Ube approach, some think, will prove easier to commercialize, although corrosion could present a problem for a commercial plant.

A study fails to link acrylonitrile to cancer
Results of a study of the mortality of acrylonitrile workers by the U.K. Health and Safety Executive and Britain's Chemical Industries Assn. have failed to confirm the compound's carcinogenic effect in man. However, the authors urge continued surveillance of acrylonitrile workers. The study of 1,111 men, who worked in six facilities from 1950 to 1968, found a statistically insignificant excess in the number of cancer deaths, although there were significant excesses in the number of deaths from stomach cancer and, among young men, from lung cancer. The British study follows a similar project at Du Pont's Camden, S.C., plant, where the incidence of cancer among acrylonitrile workers was shown to be higher than that for Du Pont workers in general.

A new design for a fluidized-bed coal combustor
A fluidized-bed system developed at Battelle Columbus Laboratories is looking for commercial backers. Herman Nack, a Battelle researcher and co-inventor of the process, says an eight-year development program has shown that the process offers an excellent response to load changes, minimal erosion and corrosion of boiler tubes, and easy startup and restart. Among the mechanical features is a dense-bed region at the bottom of the combustor through which unreacted fuel and sorbent material is recirculated. Heat-exchanger tubes are separated from the combustor. The design is easily adapted to modular construction, allowing much of the equipment to be fabricated in a factory, rather than field-erected. Battelle has licensed Struthers Wells to build the unit for enhanced oil-recovery applications, and is negotiating for applications in pulp-liquor recovery, process heaters and steam boilers.

A coal gasification project is on schedule
The $135-million KilnGas project at Wood River, Ill., to process 600 tons/day of high-sulfur coal into a medium-Btu gas for an Illinois power station boiler is under budget and on schedule. Allis-Chalmers Coal Gas, a consortium of utilities, and the state of Illinois are funding the project, which is scheduled to be completed by fall 1982. Thomas Dineen, president of A-C Coal Gas, now figures the cost of gas from the plant at $5.25/million Btu. That is up from a 1980 estimate of $4.50/million Btu, but Dineen figures a utility can generate electricity with the process for "about half the cost of a nuclear plant," or about "$950/installed kilowatt." A-C believes it can market 6,000 Mw. of capacity by 1990, even if the government provides no incentives to convert from gas and oil. Tax credits could boost the market to 18,000 Mw. The major equipment change to convert an existing boiler to the fuel is replacement of the burners, which Dineen estimates is 3% of the total capital cost. He notes that a utility could make up that cost by going into the fertilizer business. A 1,000-Mw plant burning high-sulfur coal could produce about 400 tons/day of sulfur and 20-30 tons of ammonia.

IITRI seeks backing for in-situ oil recovery
Faced with a loss of Energy Dept. funding for an *in situ* method of recovering oil from tar sands and oil shale, the Illinois Institute of Technology Research Institute (IITRI) is turning to major oil companies for backing. James Krstansky, program manager for the project, says the researchers hope to find "single source" financing. The firm is looking for $8 million to get the technology "to the point where we could design a pilot plant." The process uses radio-frequency energy to uniformly heat the oil deposits. It has been tested on a 25-cu-m tar-sand plot, yielding 8 bbl of oil for refining and 12 gal of higher distillates. The yield would translate to about $80/bbl crude oil, says IITRI. The oil-shale version of the process has been tested on a 10-cu-m plot. The Energy Dept. has invested about $5 million in the research project. IITRI thinks four or five more years of research will be needed before it can propose a demonstration-sized operation on the order of 50,000 bbl/day for oil shale and 100,000 bbl/day for tar sands. IITRI says companies that have considered investment so far are more interested in tar sands.

Newscripts

by K. M. Reese

F. M. Reese

Recent news of novel transmission for cars

A recent discussion of the variable-speed transmission for automobiles (C&EN, July 20, page 64) has elicited further information from Alan Goodson of Columbus, Ohio.

Goodson says "that other fine magazine (*Road & Track*) has informed its readers" that a Dutch auto maker, DAF, has been using a variable-speed transmission in its small cars for years. Volvo absorbed DAF a few years ago, he says, and tried the transmission in a larger car, but it did not compare favorably with a regular automatic transmission.

More recently, according to Goodson (according to *Road & Track*), Fiat has been working with a modified variable-speed transmission.

The variable-speed transmission involves a system of belts and pulleys. It absorbs more power than a regular transmission, but in principle improves a car's fuel economy by permitting the engine to run for longer periods at its most efficient speed.

Dehydrated celery studied for use by military

It has been said, possibly by Napoleon, that an army travels on its stomach. The wisdom of this maxim evidently has carried military food science well beyond the point where a cook who could make acceptable ice cream from powdered milk was worth a couple of Lana Turner movies and a second-round draft choice.

A current example is dehydrated celery. Early results of an evaluation of the current version of this product were presented by Margaret Driver before the ACS Division of Agricultural & Food Chemistry at last week's national meeting in New York City. Driver and colleagues A. R. Rahman and I. A. Taub are with the Army Natick Research & Development Laboratories, Natick, Mass.

Dehydrated celery is an important salad ingredient for military people aboard submarines or stationed in arid climates. The advantages of the product, Driver notes, are compactness, continuous availability, and uniform quality. The trick is to make a product that rehydrates to a celery of more acceptable crispness and turgor (the distension of the protoplasmic layer and wall of a plant cell by its fluid contents).

A process for making dehydrated celery was developed at the Western Regional Laboratory of the Department of Agriculture, according to Driver. As now used, the process involves blanching, treatment before dehydration with aqueous mixtures containing salts and various concentrations of humectants, such as polyols or gums, and air-drying at 110 to 120 °F.

Evaluation of the product is still under way. However, Driver says, the results to date indicate that treatment before dehydration with texturizing formulations containing 10% polyol will yield a product that can be rehydrated to a celery with good acceptability. The rehydrated celery compares well with the natural product in terms of color, flavor, and texture.

Comforting calculations on the Medfly spraying

The decision in California to douse the Mediterranean fruit fly with malathion from the sky prompted Frederic French of Portola Valley in that state to send in some comforting calculations.

According to the "Merck Index" (ninth edition), French says, malathion is 1.75 times as toxic as aspirin, "using the popular assumption that people are similar to rats." To get the same toxicity as a 5-grain tablet of aspirin, he adds, "one would have to injest* 175 mg of malathion."

The aerial-spray dosage of malathion used in San Mateo County and the Santa Clara Valley area of California was 2.5 oz per acre or 1.627 mg per sq ft, French reports. Thus to take aboard 175 mg, he says, one would have to lick up the malathion that falls on 107.64 sq ft. He suggests that "the earnest experimentalist" could arrange to do this with least difficulty by setting out a clean glass slab, 10 feet square, just before the spraying.

* Spelled that way in jest, no doubt.

Department of obscure information

- Some 6000 septic tanks are installed annually in the state of Oklahoma.
- Oil accounts for more than 30% of Venezuela's gross national product.

URL 05163

The image and reality of chemistry

Alfred Bader is chairman and chief executive officer of Aldrich Chemical. He spoke earlier this year at an awards ceremony at the University of Wisconsin, Milwaukee. Here are excerpts from what he had to say.

When I was a student at Harvard in the forties, the profession of chemistry was regarded very highly, and many of the ablest students wanted to become chemists. Ask the man on the street then what he associated with chemistry and his answer was likely to be "vitamins or new drugs, plastics, a better life."

Ask the man on the street today and his answer is likely to be "cancer" or "pollution." The reasons for this change are manifold and complex, and I would like to touch on just a few of these.

Cancer is on everybody's mind at least some of the time, and of course in a roundabout way chemical research is responsible for many deaths by cancer. For cancer is an illness of old age. Research in medicinal chemistry has helped to double our life span in the last century, and so naturally many more people die of cancer.

Another reason is that, unfortunately, as a profession we have done a very poor job educating the public and the media. Let me give you an example taken at random from many that come to mind. Some months ago the *Milwaukee Journal* had bold headlines on the front page that 2 ppb of benzene had been found in the water of a well near a chemical company in Port Washington. Two ppb—I wonder what the editor would say if someone pointed out to him that gasoline contains 2% benzene, and 2% is 10 million times as much as 2 ppb! Now, of course, we don't drink gasoline, but I am sure that many gas station operators occasionally have traces of gasoline get into their coffee or their drinking water, and then it's likely to be much more than 2 ppb.

The *Milwaukee Journal* is a very responsible newspaper. It is we, the scientists, who have done a poor job in communicating with the media about the significance or insignificance of such findings as 2 ppb of benzene.

Here, of course, is yet another reason for the disrepute of chemists and chemicals: Our analytical methods have gotten better and better and pretty soon we'll be able to show that everything is everywhere, at least in some amounts. Like 2 ppb.

Of course, yet another reason for the disrepute of chemistry is that some companies have been negligent and have polluted the environment, and it is almost comical to see some of these very companies trying to change their image by deleting the name "chemical" from their corporate names.

The reality of the matter is that chemists have contributed very heavily to the quality of life. Many of us wouldn't be alive at our age had we been born in the 17th century, and life all around us has been improved by chemistry. The image of chemistry is much worse than the reality, and the bright high school student seeing America slowly sinking into a cesspool of chemicals on the cover of *Time* magazine wants no part of chemistry.

Therefore, you will find that because chemistry is today associated with cancer and pollution many fewer of the brilliant young students will enter chemistry, and the quality of chemical research will decline and so will the rate of improvement of the quality of life.

While many able chemists will disagree with me, I believe that historians of science looking at the 20th century will conclude that pure synthetic organic chemistry peaked shortly after the middle of this century. Once Woodward had synthesized such enormously difficult compounds as vitamin B_{12} and strychnine, everything else seemed almost anticlimactic. From then on, the great contribution of chemical research is in its application to biochemistry, to understanding the chemistry of life. If fewer and fewer really outstanding students enter chemistry—as is now happening—that understanding will come about very much more slowly.

Research scientists are the locksmiths to a better life, and only when society as a whole, and our government, and our media understand this, will there be a change. □

BOOKSHELF

Safe Handling of Chemical Carcinogens, Mutagens, Teratogens and Highly Toxic Substances. 2 vols.

BY DOUGLAS B. WALTERS

Ann Arbor Science Publishers, Inc., 10 Tower Office Park, Woburn, Mass. 662 pages. $33.95 for each Volume.

Reviewed by Wesley R. Van Pelt, Manager, Industrial Hygiene Dept., Hoffmann-La Roche Inc., Nutley, N.J.

This two-volume set, complete with bright red and white cover, is a compilation of material derived from the symposium "Safe Handling of Chemical Carcinogens, Mutagens, and Teratogens—The Chemists' Viewpoint" at the American Chemical Soc./Chemical Soc. of Japan Chemical Congress, Honolulu, in April 1979. Like so many costly, multiple-author conference proceedings of the "environment-safety-ecology" milieu, this work has the potential of being shallow, uncritical, disjointed, out-of-date and generally useless. In fact, the exact opposite is true here.

A superb job has been done in editing this book. For its intended purpose (a practical reference for the research chemist who uses carcinogens or other nasties), the work lives up to expectations. The editor has chosen his coauthors well. They appear to have first-hand knowledge of their particular areas, which leads to a clear and critical review of the literature. References are numerous and as recent as 1978.

The six major chapters are: "Laboratory Design, Handling and Management"; "Chemical Monitoring and Medical Surveillance"; "Informational Needs and Chemical Classification"; "Structure-Activity and Toxicity Prediction"; "Spill Control, Degradation, and Deactivation"; and "Disposal".

This is a practical book, describing the state of the art. However, the reader may be disappointed when the state of current knowledge leads to the often-heard conclusion "more research is needed."

For example, the chapter on photodegradation of carcinogens such as the nitrosamines describes seemingly contradictory experiments on the effectiveness of light in destroying these molecules. Sometimes light works, but more often it results in only partial destruction or the formation of equally toxic breakdown products. Even the popular aluminum-foil/alkali method for nitrosamines is shown to produce the potent carcinogen 1,2-dimethylhydrazine. On the other hand, some problem solutions are given in almost recipe style. Several chapters describe in great detail successful methods of packaging small vials of carcinogens for storage or transportation.

This book will be valuable to research chemists, industrial hygienists, and others who need to deal with small quantities of highly toxic chemicals.

IN RAPID REVIEW

Unit Conversions and Formulas Manual. By Nicholas P. Cheremisinoff and Paul N. Cheremisinoff. Ann Arbor Science Publishers Inc., 10 Tower Office Park, Woburn, Mass. 171 pages. Paperback. $8.95. A collection of tables showing conversions from one unit to another, together with general formulas often encountered in the fields of: electrical engineering; general chemistry; hydraulics; mathematics; heat transfer; and statics and dynamics. There is also a section on general conversions and one on fan laws and formulas.

Handbook of Organic Industrial Solvents. 5th ed. Order directly from: Alliance of American Insurers, 20 N. Wacker Drive, Chicago, IL 60606. 124 pages. Paperback. $4.20 (includes first-class mailing). Physical and chemical properties are tabulated for a wide range of organic industrial solvents. Health, skin-contact, fire, and explosion hazards are listed. Engineering controls are described; information is given on waste disposal methods.

Introduction to Modern Electronics. By Julien C. Sprott. John Wiley & Sons, New York. 349 pages. $24.95. College text that assumes knowledge of introductory physics and calculus. Among the topics covered are: direct-current, transient, and sinusoidal and other time-dependent circuits; vacuum tubes and transistors; amplifiers, oscillators, and optoelectronic devices; digital circuits; communications electronics.

A Guidebook to Nuclear Reactors. By Anthony V. Nero, Jr. University of California Press, Berkeley, Calif. 1979. 289 pages. Paperback. $9.95. The four parts of this volume include: A General Introduction to Nuclear Reactors; Commercial Nuclear Reactors (including pressurized-

Newscripts

by K. M. Reese

Hazards posed by newts and dinoflagellates

In the news this week are a couple of hazardous organisms, an Oregon rough-skinned newt (*Taricha granulosa*) and a dinoflagellate (*Gonyaulax catenella*).

The newt was involved in an incident reported by physician Susan Bradley and pharmacist Larry Klika of Coos Bay, Ore. (*Journal of the American Medical Association*, July 17, page 247). A 29-year-old man drank about 150 mL of whiskey before noon one day in July and at 6 PM ate a 20-cm rough-skinned newt on a dare. His lips were tingling within 10 minutes. During the next two hours he complained of numbness and weakness, but refused to see a doctor. He then suffered a cardiopulmonary arrest.

The patient was taken to a hospital, where strenuous resuscitative measures were applied. At the same time, Bradley and Klika called various poison control centers around the country. They finally reached a biologist who told them about the toxicity of the newt, but by then it was 2:30 AM, and the patient died soon after.

The toxin turned out to be tetrodotoxin ($C_{11}H_{17}N_3O_8$), which occurs in at least 40 species of puffer fish and certain newts. It causes muscular paralysis resulting in hypotension and respiratory arrest. A 10-g, rough-skinned newt has been reported to contain, on the average, some 250 μg of toxin, enough to kill 1500 white mice by injection. With the exception of man, mammals familiar with the newt refuse to eat it.

The hazardous dinoflagellate mentioned above is the cause of paralytic shellfish poisoning (PSP). This kind of poisoning is a major problem in California, according to a rundown by reporter Shirley Hudgins in *Sea Grant Today* (May/June 1981—published by the extension division, Virginia Polytechnic Institute and State University). The problem is being studied by biologists Bernard Abbott and Maria Ross at the University of Southern California with support from the Sea Grant program of the National Oceanic & Atmospheric Administration. They're working with Gary Kleppel of the Southern California Coastal Water Research Project.

The toxic agent in PSP is saxitoxin [$(C_{10}H_{17}N_7O_4)^{2+}$]. The compound occurs in *G. catenella* as part of a larger molecule. Shellfish who eat the one-celled dinoflagellate simply store the larger molecule because their digestive systems, being nonacidic, do not break it down. When humans eat the shellfish, however, their digestive systems release the toxin.

Ingestion of only a few shellfish produces passing nausea and stomach cramps. Many such cases probably are diagnosed as a touch of some other common ailment. However, ingestion of enough of the contaminated shellfish can cause death within a few hours. The toxin blocks sodium transport in the nervous system. The victim feels numbness around the lips and then in the stomach and eventually suffers total paralysis.

PSP was first reported in this country in 1903. Some 400 cases and 30 deaths were reported during 1927–80. In 1980 alone, 100 cases and three deaths were reported.

A professorial exchange

The other day in Washington, D.C., there was a meeting concerned with the conservation of stone buildings and monuments. The work is highly interdisciplinary, and those present included a professor of geology who knows about stone, but not necessarily very much about conservation, and a professor trained in chemistry whose specialty is conservation of historic and aesthetic works.

The premeeting chitchat revealed that petroleum companies are snapping up young geologists at handsome salaries as fast as the schools can crank them out—faster, actually, because the companies also are snapping them up from each other. At this point, the geologist and the chemist engaged in the following exchange:

Geologist: "I have a master's candidate in geology who's decided she wants to go into conservation. What kind of program would you recommend?"

Chemist: "How about psychotherapy?"

Department of obscure information

- The Mediterranean fruit fly does not eat California iceberg lettuce.
- Japan consumed 87.6 billion cubic meters of water in 1975.

BNA

Current Report

Carcinogens

UNION CARBIDE FINDS NO CORRELATION BETWEEN CANCER CASES, PLANT EXPOSURES

Epidemiological studies by Union Carbide Corporation failed to find any correlation between brain cancer cases discovered at a Union Carbide petrochemical plant in Texas City, Texas, and employee exposures to chemicals used or manufactured at the facility, the company announced Nov. 11.

In a letter mailed to each employee at Texas City, Plant Manager Damon L. Engle and Plant Physician David H. Glenn said that the excessive occurrence of brain cancer "may represent a chance occurrence" and is not a result of any chemical exposure at the plant.

The Occupational Safety and Health Administration and the National Institute for Occupational Safety and Health reported last year that they had found 18, and possibly as many as 25, brain cancer cases among employees at the Texas City plant. That was about twice the incidence rate found among the surrounding population, the agencies reported (Current Report, Oct. 30, 1980, p. 573).

Union Carbide's study, begun in 1979, found 12 deaths due to primary malignant brain cancer among the 6,588 Texas City employees studied. By comparison with U.S. rates, 7.42 cases would have been expected, the company stated.

The overall mortality rate of employees working at Texas City since 1941 is "significantly less" than the national average, 765 observed compared with 923.82 expected, according to the company.

Three reasons for labeling the four or five excess deaths a chance occurrence were given by Engle and Glenn:

- The company was unable to associate the deaths with any particular chemical exposures.
- The types of brain cancer found are present in the same percentages as those seen among the general population. Ordinarily, the company maintained, chemically caused cancer is a specific and often unusual type, different than those seen in the general population.
- Excessive brain cancer has not been confirmed in any chemical plant similar to the Carbide facility in any other part of the U.S.

"There is no cause for alarm," the company officials told the Texas City employees. They added that deaths due to cancer, "however small in number," will "continue to receive our attention and concern," and that Carbide will continue its investigations and cooperation with NIOSH in the agency's own on-going study.

Union Carbide said it expects that the NIOSH study will reflect conclusions similar to those of the Carbide investigation. Both studies used a common data base that includes the health and work histories of 6,588 workers who have been employed at the Texas City plant since 1941, according to the company.

Current standards and practices at the Texas City facility "provide more than adequate protection from known health hazards," Union Carbide asserted.

The Carbide study was reviewed by Dr. Brian McMahon of Harvard University and and Dr. Philip Enterline of the University of Pittsburgh.

NIOSH Responds

A spokeswoman for the National Institute for Occupational Safety and Health, while stressing that the institute was pleased with the cooperative professional relationship it has experienced with Union Carbide, nonetheless questioned some of the company's interpretations of the data.

Spokeswoman Deborah Van Brunt told BNA Nov. 16 that, although NIOSH could corroborate the overall results reported by the company, an additional finding was made of a threefold increased risk among employees who worked at the plant 20 years or longer. In addition, NIOSH said it was aware of 23 — not 12 — brain cancer cases, as reported in its preliminary findings in August 1980.

The institute also took issue with the three reasons stated by Carbide for speculating that the excess may have been due to chance.

First, the institute acknowledged that the the failure to find a correlation between particular exposures and the cases was "important evidence" but maintained that such evidence does not rule out an occupational hazard as the cause. Van Brunt added that the cause may be traceable instead to a class of chemicals or certain chemicals in combination with one another.

Second, the institute stated that brain cancer in general, as well as the types of brain cancer found at the plant, indeed represent an unusual and specific cause of death. Five such deaths usually are found among 100,000 white males in the general population, the institute maintained, making it the sort of "unusual" cancer attributed to chemical exposures by Carbide. In addition, the institute questioned that company assumption, saying that common types of cancer are related to occupational exposures as often as are unusual types.

Third, the institute, while acknowledging that no similar excess had been confirmed at other locations, contended that unconfirmed higher-than-expected incidence rates found at several plants "raise a very strong suggestion of brain cancer as an occupational hazard." NIOSH gave as an example a Union Carbide plant at South Charleston, W.Va., which it said used similar chemicals to those at the Texas City facility. A twofold brain cancer excess was found there, it noted.

Appropriations

HOUSE APPROVES STOPGAP FUNDING BILL, REJECTING PROPOSAL FOR IMMEDIATE CUTS

The House of Representatives Nov. 16 approved a continuing resolution that would provide stopgap funding through the end of this fiscal year for the Occupational Safety and Health Administration and other agencies not yet appropriated funds by Congress.

The bill (HJRes 357) was passed by a vote of 195 to 187 after the House rejected by 201 to 189 a White-House backed amendment seeking to institute a 5 percent funding reduction in levels set by the stopgap legislation. The across-the-board amendment, introduced by House Minority Leader Robert Michel (R-Ill), was seen as an attempt to put into law at least part of the President's September request for a sweeping 12 percent cut in domestic programs.

The new continuing resolution will affect OSHA, the National Institute for Occupational Safety and Health, and the

NAS has not yet decided whether to make copies of the report available for public distribution. For further information, contact the NAS Board on Toxicology and Environmental Health Hazards, (202) 334-2216.

Hazardous Waste

COURT GIVES EPA FEBRUARY DEADLINE FOR LAND DISPOSAL FACILITY RULES

Regulations setting design and operation standards for existing hazardous waste land disposal facilities must be issued by the Environmental Protection Agency by Feb. 1, 1982, a federal district court judge ordered Nov. 13 (*Illinois v. Gorsuch*, D.C. D.C., Nos. 78-1689, 78-1715, 78-1734, and 78-1899).

EPA Administrator Anne M. Gorsuch had asked the court to grant EPA a delay until fall 1983 to issue the final standards for permitting hazardous waste land disposal facilities (Current Report, Oct. 23, p. 813).

The rules, mandated by Section 3004 of the Resource Conservation and Recovery Act of 1976, were to be established by April 18, 1978.

In his order, Judge Gerhard A. Gesell noted that EPA already had missed two court-ordered deadlines and that it now, "incomprehensibly, seeks a further two-year extension on the most shallow showing."

Gesell said Gorsuch told the court that EPA's prior research and analyses, which were to be the basis for resolving complicated technical and policy issues, were conducted inadequately by the Carter Administration.

However, the judge said, the 18-month deadline set by RCRA for issuing the rules "indicates that Congress did not direct the agency to resolve every conceivable problem before issuing regulations."

EPA can satisfy the requirements of RCRA and the agency's "lingering technical and policy concerns" by issuing the regulations and revising them later, if "understanding and expertise expand," Gesell added.

No Jurisdiction on Related Issue

In other action in the case, Gesell declined to order EPA to reverse its decision to suspend temporarily the issuing of permits for existing and new surface storage impoundments and incinerators (Aug. 7, p. 435).

Gesell said the agency had argued that comments received on these regulations indicated the rules, which apply to pits, ponds, lagoons, and incinerators, were "technically and economically infeasible."

In accordance with his December 1979 order, Gesell continued, EPA, in January 1981, issued the regulations and has since taken action to suspend them.

While the court had ordered the agency to issue the rules, the judge said, the court does not intend to "undertake a continuing supervision of the agency's implementation of its responsibilities after deadlines have been met."

Unless it can be shown that EPA's suspension of its regulations constituted a "bad-faith effort to evade the court's order," the case is closed in the district court, he added.

Gesell said it would appear that the suspension action, without prior notice or comment period, "is the type of agency action subject to exclusive review" in the U.S. Court of Appeals for the District of Columbia.

The two decisions came in a suit brought by Illinois, two environmental groups, and the National Solid Waste Management Association to compel EPA to issue the hazardous waste rules as required by RCRA.

The Environmental Defense Fund Inc., one of the environmental groups, in this case and in a separate petition for review filed Sept. 18 with the appellate court (*Environmental Defense Fund, Inc. v. Gorsuch*, No. 81-2025) challenged the legality of EPA's suspension of permit processing.

EDF argued that suspension of permitting would prevent from being put into effect the environmental protections for which RCRA was enacted.

EPA recently was granted an extension for filing its record in the appellate court case, pending the rendering of an opinion by the district court.

Carcinogens

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0148-7973/81/800.50

Technically Speaking

Legislation imposing strictures on substances that might harm the environment often limit discharges to a few parts per million. For a fresh look at what a small figure this is, consider that *one* part per million is equal to:

—One inch in 16 miles;
—One minute in two years;
—A one-gram needle in a ton of hay;
—One penny in $10,000;
—One ounce of salt in 62,500 pounds (of food);
—One drop of Vermouth in 80 "fifths"—a very dry martini!

Ref: *Chemecology*, May 1971