Final rules set for exposure to carcinogens

New rules may force plant shutdowns but labor and industry groups are challenging the rules in court for opposing reasons

After some 20 months of winding their way through the federal bureaucracy, permanent rules to protect workers from exposures to 14 carcinogens are slated to take effect today, Feb. 11. But the long regulatory battle is by no means over. Winning the race to the courthouse, four chemical trade groups and nine chemical firms are jointly suing for judicial review of the Occupational Safety and Health Administration rules. No less upset, a labor union and a Ralph Nader-affiliated group joined the legal fray for review just a week ago.

Hardly anyone is surprised that these legal steps were taken. The rules, OSHA's first major effort at developing standards for chemicals, have major health and economic ramifications. Precedents also will be set for covering other work-place carcinogens at a later date. Some 600 carcinogens (in humans or animals) are now on the toxic substances list of the National Institute for Occupational Safety and Health, OSHA's research arm.

By OSHA's rather conservative estimates, potentially some 2000 workers are exposed to the 14 chemicals. Precise data on occupationally linked deaths and cases of tumor development are not available.

Only seven of the 14 chemicals were still in commercial production when OSHA released its final environmental impact study in September 1973. They are benzidine, 3,3′-dichlorobenzidine (DCB), α-naphthylamine (1-AN), β-propiolactone, chloromethyl methyl ether (CMME), 4,4′-methylene-bis(2-chloroaniline)—commonly referred to by its tradename, MOCA—and ethyleneimine (EI). The other chemicals apparently are used chiefly in research.

OSHA foresees plant shutdowns for the commercially produced carcinogens, particularly those operations involving small firms. The agency also

Cancer hazard and volume used vary for 14 chemicals under OSHA rules

In its final rules, the Occupational Safety and Health Administration judges the carcinogenicity and potential employee exposure for:

2-Acetylaminofluorene (2-AAF). Carcinogenicity demonstrated in animals. Animals and humans both produce the same, more carcinogenic metabolite, *N*-hydroxy-2-AAF. Thus, it seems reasonable to conclude that 2-AAF is carcinogenic in man. Research uses: 10 employees potentially exposed.

4-Aminodiphenyl (4-ADP). Potential to induce bladder cancer in humans has been established in epidemiologic studies. Research uses now; previously, a rubber antioxidant and dye intermediate. Fewer than 20 employees potentially exposed.

Benzidine and its salts. Epidemiologic investigations clearly demonstrate it is carcinogenic in humans, inducing urinary bladder cancer. Used as a dye intermediate (U.S. production, 1.5 million pounds in 1972). About 62 employees potentially exposed.

3,3′-Dichlorobenzidine (DCB). Shown carcinogenic in controlled animal studies; metabolism in man unclear. Used as pigment intermediate and curing agent. (In 1971 U.S. production was 3.5 million pounds, imports were 1.4 million pounds.) 250 to 2500 employees potentially exposed.

4 - Dimethylaminoazobenzene (DAB). Carcinogenicity demonstrated in animals, including dogs (aromatic amine metabolism is similar in dogs and man). Dye uses in past, now research uses. Twenty-six employees potentially exposed.

α-Naphthylamine (1-NA). Contamination of 1-NA with β-naphthylamine (2-NA) confounds epidemiology. Metabolites are carcinogenic in animals. Used in dyes and agricultural chemicals. About 200 employees potentially exposed.

β-Naphthylamine (2-NA). Epidemiologic investigations demonstrate clearly that 2-NA is carcinogenic in man. Not known to be produced in U.S. Possible use in cancer research or as an analytical standard. 27 employees potentially exposed.

4-Nitrobiphenyl. Structurally similar to 4-ADP. Human bladder cancers attributed to 4-ADP may be due to this compound. Possible research uses. At most, 20 employees potentially exposed.

***N*-Nitrosodimethylamine** (DMN). Broad spectrum of carcinogenicity in animals; thus, a potential human carcinogen. Used in research, as a solvent, and in making rocket fuel. 23 employees potentially exposed.

β-Propiolactone (BPL). Epidemiologic data on human carcinogenicity unavailable. Demonstrated carcinogen in animals. Intermediate for acrylates and as a sterilizing agent, especially for vaccines. 27 employees potentially exposed.

Bis(chloromethyl)ether (BCME). Very hazardous animal carcinogen in parts-per-million amounts. Epidemiologic studies indicate high probability of lung cancer. Lab use and intermediate. Can form spontaneously from formaldehyde and acid chlorine ions in humid air. 81 employees potentially exposed (low estimate if spontaneous formation of BCME is a hazard).

Chloromethyl methyl ether (CMME). Carcinogenic potential in animals demonstrated for chemically pure CMME. Epidemiologic investigations strongly implicate it as a human carcinogen, but concomitant exposure to BCME (contaminant in commercial grades of CMME) cannot be discounted. Used in making ion exchange resins. Approximately 169 employees potentially exposed.

4,4′-Methylene-bis(2-chloroaniline). Clearly demonstrated as an animal carcinogen; studies on workers cannot be relied upon to assess the hazards of occupational exposure. Tradenamed MOCA, it is widely used in elastomers. Estimated U.S. production in 1972 was 7.2 million pounds. A "best guess" of potential employee exposure is 10,000 employees.

Ethyleneimine (EI). Carcinogenicity rests on extrapolation to humans of findings of two separate, controlled animal studies. Wide variety of uses, notably in paper and textile industries. About 82 employees potentially exposed.

International

Canadian chemical firms chalk up great year

The Canadian chemical industry probably turned in its best growth year of the past decade in 1973. First reports from the four largest chemical companies that disclose figures publicly—Canadian Industries, Ltd. (CIL), Celanese Canada, Du Pont of Canada, and Union Carbide Canada—show sales up 20% and after-tax earnings up 60% over 1972.

These gains were the best for the four companies since 1963. The upswing means that Canadian chemical producers are finally into a boom after seeing recovery stalled in 1972. That year, sales rose 6%, and earnings 7%.

The fourth quarter capped the year's rise with sales growth of 23% and earnings explosion of 95% over fourth-quarter 1972 for these four companies. Unlike the situation in the U.S., the final three months in Canada were the strongest of the year.

The autumn sales surge ran quite evenly through the four firms. CIL pushed up sales 27% over fourth-quarter 1972 to $95.4 million for the period. Its sales totaled $382.9 million for the year. Du Pont of Canada made a 19% increase in fourth-quarter sales to $85.3 million, pushing sales to $308 million for the year. Union Carbide Canada ran sales up 22% to $68.7 million in the fourth quarter and posted $245.7 million for the year. And fast-recovering Celanese Canada had a 25% gain in sales in the quarter to $61 million, and sales of $220.7 million for the full year.

The earnings picture is slightly different. Du Pont of Canada kept its traditional lead, with earnings shooting up 60% over fourth-quarter 1972. Full-year earnings at Du Pont rose 24% to $17.8 million. Union Carbide Canada, usually just behind Du Pont as an earner, saw its profits jump 31% in the fourth quarter to reach $4.3 million and $15.7 million for the year. CIL ran earnings up 81% to $3.1 million in the quarter and made just less than $16 million for the year. Celanese Canada continued to snap back, making $3 million profit in the fourth quarter to reach $8.2 million for the year. In both the fourth quarter and the full year of 1972, Celanese Canada had deficits.

Even with these remarkable gains, profitability of the four chemical firms still trailed their 1960's pace. In fact, the group as a whole has made up only 40% of the sharp drop in after-tax profit margin on sales that occurred from 1964 through 1970. The four chemical companies' 1973 earnings came to 5% of sales. This compares with 3.7% the year before, 3.1% in the low year of 1970, and 7.8% in 1964, the previous peak year.

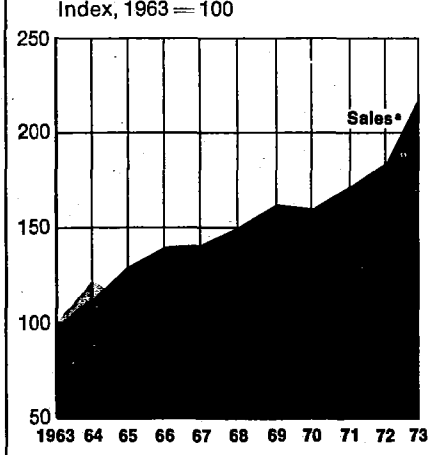
In the fourth quarter of 1973, earnings reached 5.4% of sales for these companies. Du Pont of Canada led with 7.5% to give 5.8% for the year. Next was Union Carbide Canada with 6.2% for the fourth quarter and 6.4% for the year. Then came Celanese Canada with a much-improved 5% in the fourth quarter and 3.7% for the year. Finally, CIL had 3.2% for the quarter. For the full year, CIL turned in 4.2% as a result of an exceptionally strong second quarter.

The second and fourth quarters in Canada show the same seasonal upswing as in the U.S. The spring period in Canada carries a particular dominance. In the second quarter of 1973, for example, sales, profits, and profit margins reached their highs for the year for the combined results of the four Canadian firms. Their combined profit margin in the second quarter of 1973 hit 6.1%.

Factors behind the great jump in 1973 earnings were much the same in Canada as in the U.S. Union Carbide Canada president John S. Dewar says that his company's improvement came from higher sales, near-capacity operations, and revised corporate tax rates. He notes that his firm's return on capital from operations rose to 10.2% from 7.6% the year before.

However, Mr. Dewar does not regard this rate of return as good enough. "Further improvement will be necessary to justify the commitments of new funds to build facilities on a world-competitive nature in the capital-intensive, high technological sectors. In addition, significant and immediate government assistance is required to combat rampant inflation at exorbitant fuel and feedstock costs if Canada is to take advantage of its new-found potential to become a major factor in these high-value-added growth sectors of world demand."

Troubled Canadian chemical earnings jump 60% in 1973



a Combined results of Canadian Industries, Ltd., Celanese Canada, Du Pont of Canada, and Union Carbide Canada.

THE ENVIRONMENT NEEDS YOUR HELP. MAYBE IF YOU KNEW MORE, YOU'D DO MORE.

This is a partial list of publications available from the United States Environmental Protection Agency telling what's being done, what needs to be done and how you can help to clean up the environment. Multiple copies of those publications with prices given are available from the U.S. Government Printing Office, Washington, D.C. 20402.

1. Health Effects of Environmental Pollution

Booklet, 24 pages.

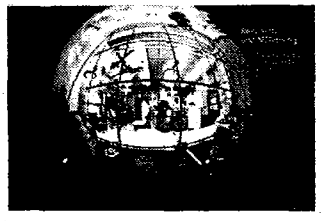
A description of the various adverse effects that the pollution of the environment has had on human beings. This publication is addressed to the citizens who no longer are willing to accept an environment that menaces their health and lowers their enjoyment of life.

2. Research and Monitoring

Cornerstone for Environmental Action

Illustrated booklet, 16 pages, 60¢.

A description of the work of scientists in EPA's Office of Research and Monitoring in determining pollution levels, the effects of various pollutants on health and the ecology and the effectiveness of control techniques.



3. Action for Environmental Quality

Standards and Enforcement for Air and Water Pollution Control

Illustrated booklet, 24 pages.

How two of EPA's major programs—air and water pollution, work. The setting of standards, establishment of enforcement machinery and assessment of their contribution to the goal of restoring the environment.

4. The Challenge of the Environment

A Primer on EPA's Statutory Authority

Booklet, 52 pages.

EPA was created to coordinate efforts to combat pollution and protect the environment. It combined the programs of 15 government departments and agencies dealing with air and water pollution, pesticides, solid waste, radiation and noise. This booklet discusses the major laws EPA is responsible to administer.

5. Your World, My World

A Book for Young Environmentalists

Illustrated booklet, 52 pages, $1.50.

An attempt to instill young people of elementary and junior high school age with an understanding of environmental problems, to explain some of the efforts being made by EPA and to suggest actions that can be taken by the young.

6. In Productive Harmony

Environmental Impact Statements Broaden the Nation's Perspectives

Pamphlet, 16 pages.

Explains the impact statements required by the National Environmental Policy Act of 1969—when they are required, how they are prepared, who is responsible for reviewing them—and assesses the effectiveness of the impact statement process in reducing environmental damage from Federal activities.

7. Common Environmental Terms

A Glossary

Pamphlet, 28 pages.

A glossary for the lay person and student rather than the professional ecologist. Words and terms which are commonly encountered in discussions of environmental matters are defined.

8. Finding Your Way Through EPA

Booklet, 48 pages.

A directory intended to help people outside EPA find the insiders who can answer their questions. There are listings of key sources of information, an up-to-date organizational chart and an index by subject interest all to be periodically updated.

9. Highlights—The Federal Environmental Pesticide Control Act of 1972

Pamphlet, 8 pages.

An explanation of the Federal role in regulating the sale and use of pesticides under this law, which is designed to reduce the dangers of pesticides by placing strict controls on their application and use.

10. Highlights—The Marine Protection, Research, and Sanctuaries Act of 1972

Pamphlet, 6 pages.

An explanation of the most significant provisions of the law that is aimed at regulating the dumping of pollutants into oceans and ultimately seeks an end to the practice.

11. An Environmental Bibliography

Pamphlet, 20 pages, 15¢.

A compilation of suggested reading intended to enlarge public awareness of environmental problems and to provide the information necessary to influence policies and actions.

12. Citizen Action Can Get Results

Pamphlet, 12 pages, 20¢.

Citizen involvement is an integral part of the environmental movement. This pamphlet describes several case histories of successful citizen campaigns and also contains suggestions for individual action.

13. Highlights—The Federal Water Pollution Control Act Amendments of 1972

Pamphlet, 12 pages.

A digest and explanation of the provisions of the comprehensive environmental law that has as its major goal the cleanup of the Nation's waterways.

14. Groups That Can Help

A Directory of Environmental Organizations

Pamphlet, 16 pages, 15¢.

A partial directory of national, non-profit organizations working for the restoration and protection of the environment that can be contacted by individuals seeking information and advice.

15. Highlights—The Federal Noise Control Act of 1972

Pamphlet, 6 pages.

An explanation of the major provisions of the law that gives EPA responsibility for setting and enforcing standards to control noise from a broad variety of sources.

16. Toward a New Environmental Ethic

Illustrated booklet, 28 pages, 60¢.

A basic role of EPA is to support, encourage and give direction to the development of an environmental ethic that benefits man and protects the ecosphere. This booklet discusses EPA's various divisions and what they are doing to fulfill this role.

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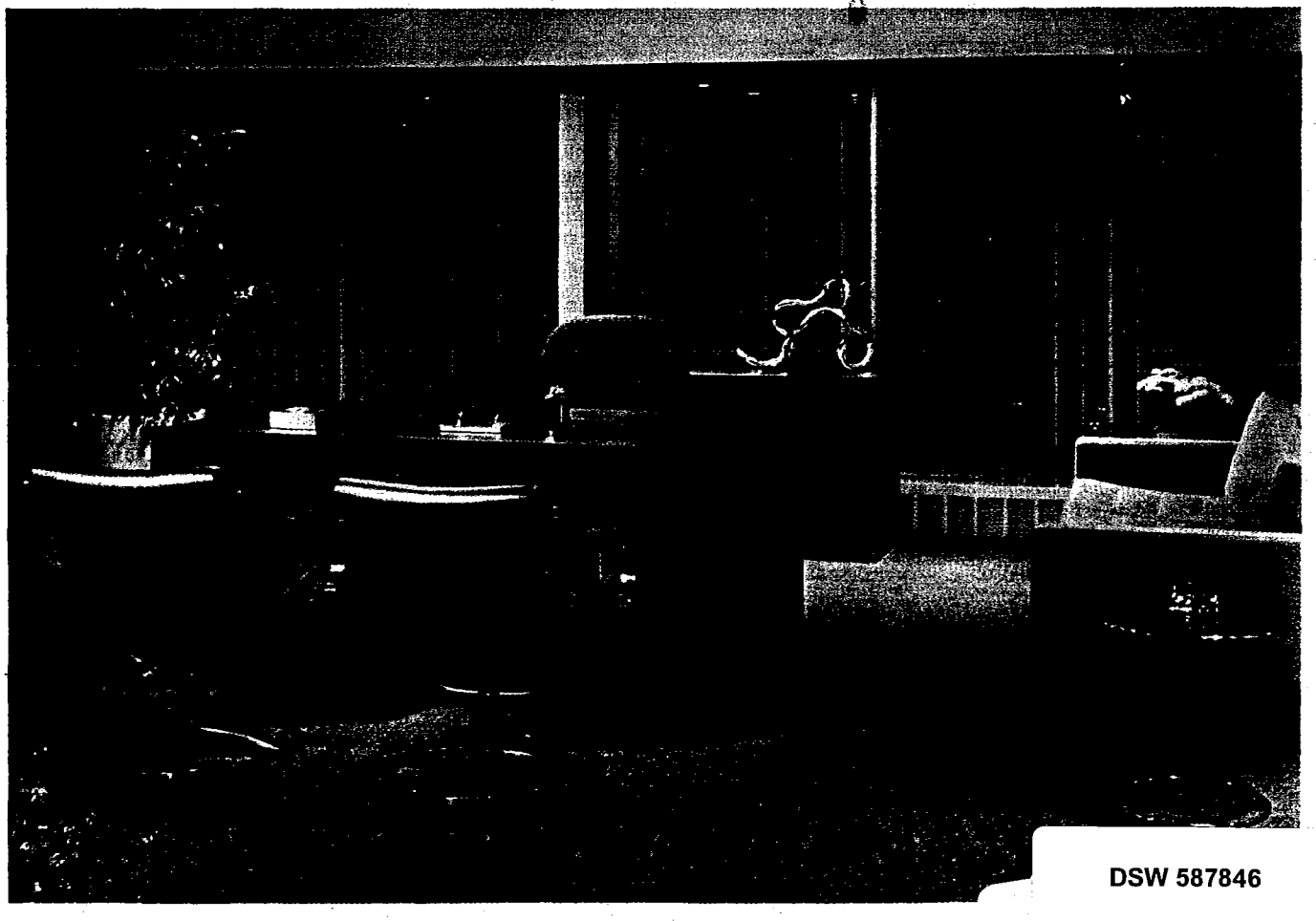

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