

Will cancer link retard chemical growth?

With industry hit by carcinogenicity disclosures and epidemiological links to products there is need for fast tests, priority systems to prevent stifling product development

The chemical industry, battered by disclosures of carcinogenicity of some products and tainted by epidemiological data that links cancer risk with exposure to others and threatens to stifle new-product development, has some sympathetic understanding from a source that has long been critical of some of the industry's practices.

Irving Selikoff, director of the environmental science laboratory at Mount Sinai School of Medicine (New York), says, "On the one hand, a chemical introduced today may not show a detectable cancer risk for 20 years or more. But it's difficult to consider that no new materials or processes be introduced into industry and agriculture until we learn how to predict whether or not they will have delayed toxicity."

Selikoff, a physician who has been doing cancer research for almost 25 years, primarily in the area of lung cancers, has been associated with asbestosis in cases such as Reserve Mining's discharge of millings into Lake Superior and worker exposure at United Asbestos and Rubber Co.'s Paterson, N.J., and Tyler, Tex., plants.

But he sees the case of vinyl chloride as a "success story." He says it was a "success for science in having defined the problem; success for labor in the rapid mobilization of concern; success for government in urgently collecting data, evaluating it and translating it into necessary regulations; and success for industry in preparing the necessary engineering controls to minimize or eliminate the hazard."

Unhappy Position: As for other chemicals, he says, "We are currently in the uncomfortable and scientifically unhappy position of recognizing the possibility of important hazards in the absence of appropriate studies for their evaluation. This invites extrapolation, but extrapolation is a poor substitute for data."

We are in this position, he says, because of "three decades of neglect, of laboratory research not done, of epidemiological studies omitted, of analyses not considered, of judgments not made. It's very difficult to catch up."

John A. Zapp, Jr., director of Du Pont's Haskell labs agrees that there is a need to gather more data. "We all erred in as-

suming that only a few chemicals could cause cancer. As a result, there have been surprises like vinyl chloride. Now that the error is evident, industry is taking steps to avoid its repetition," he says.

"But the amount of data we can present now is limited and the final decision in a particular case is going to have to be political," says another chemical industry scientist.

Some of the hard political decisions—for example, toxic substances control—are still pending.

Others have already been made—often under far from ideal circumstances. Red Dye No. 2 is an instance. The U.S. became concerned after Russian research indicated that in a limited sample of animals there were more cancers in a group that consumed the dye than in those that did not. Efforts to duplicate the tests in the U.S. proved difficult. Finally, Food and Drug Administration tests became the basis for the ban on the dye because they provided the best available data. But the FDA tests are generally referred to as the "bungled" study because animals were put into wrong cages and pathology tests on dead rats were not run promptly.

In the absence of conclusive testing, there has been a tendency to rely on epidemiological data for clues to cancer trends. And the work of Joseph Fraumeni at the National Cancer Institute in relat-

ing environmental factors to cancer deaths offers "interesting clues," says Leon Golberg, president of the Chemical Industry Institute of Toxicology.

But some of the epidemiological data is confusing. And much of the environmental data remains to be interpreted. For example, breast cancer is the leading cause of cancer deaths among U.S. women. In Japan, it is not a major factor. But when Japanese women emigrate to the U.S., the incidence of breast cancer increases, shifting to the U.S. pattern.

And there is a trend for the 100,000 cases per year of cancer of the colon: high among meat eaters, low among consumers of large amounts of cereals.

There has also been a tendency to sensationalize the limited data that have been available. For example, a 5.2% increase in cancer was reported for the first seven months of last year and Frank Rauscher, director of the National Cancer Institute called it "startling and disturbing." The usual yearly increase is 1%. But the data is now undergoing more careful analysis and it looks as though the increase actually is closer to the normal one.

Pursuit of Priorities: Government officials are moving to overcome the problems of data interpretation. They realize the need to standardize carcinogenicity testing and the National Institute of Environmental Health Sciences, which is part of the Dept. of Health, Education & Welfare, held the first of a series of four conferences on the problem of coordinating federal agency research into the carcinogenicity of chemicals at Bethesda, Md., last week.

Mount Sinai's Selikoff has some suggestions of his own on filling the information gap. He says the scientific community must have priorities so that limited resources can be put to their best use. "We should concentrate our resources on those agents that are likely to involve many workers in multiple industries, and which are likely to be potentially disseminated into the community at large," he says.

Selikoff offers some guidelines for the establishment of these priorities in the form of seven questions: (1) How many people are likely to be exposed? (2) Will an occupational agent be likely to escape



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environment

into the general environment? (3) Is there any suspicion from other data on similar chemicals? (4) Is there evidence of organ toxicity other than carcinogenicity from the chemical? (5) Have human populations already been exposed to the chemical for more than 15 years so that exposure could be evaluated? (6) Do pilot or feasibility studies provide any hints? (7) What is the intensity of human exposure?

Selikoff advocates "navigating between the Scylla of suspicion based on limited data and the Charybdis of omission and neglect." And he acknowledges that there may be potential hazard in any quantity of some chemicals. But he says that "as a practical matter there probably are levels at which so few cases [of cancer] might occur as to make the risk academic."

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