

Tentative Agent Orange Settlement Reached

Accord avoids trial but leaves unaided and unanswered many complex questions about dioxin's effects on human health

A group of Vietnam veterans, which brought suit against seven chemical companies that produced the herbicide Agent Orange for the U.S. military, agreed to a tentative settlement of \$180 million—said to be the largest of its kind—shortly before trial was scheduled to begin on 7 May. The agreement, guided by Judge Jack B. Weinstein of the U.S. District Court in Brooklyn, New York, ends a legal battle that has been pending for 5 years.

The suit alleged that the dioxin-contaminated herbicide, made by the chemical companies and used as a defoliant during the Vietnam War, is responsible for numerous medical problems afflicting the veterans and their families. By agreeing to the settlement, the parties deliberately left those allegations unresolved. Indeed, lawyers for Dow Chemical Company, one of the defendants, have said that they agreed to settle in part because the company believed that the complex scientific issues might have been too difficult for a jury to sort out.

This leaves the door wide open for still more lawsuits over the same issues. Thus, although the major veterans' group, representing tens of thousands of veterans and their families, and the chemical companies have reached a tentative settlement, it does not extend to other parties, including the federal government, which has been faced with separate legal claims from both the veterans and the chemical companies. Dow, for example, filed a lawsuit in 1980 seeking to place legal responsibility on the government for any damages arising from the use of Agent Orange; the company is considering reactivating this suit to recoup its contributions to the \$180-million settlement, a spokesman says. The veterans' group also is planning to pursue its case against the government, and it will "hinge on the medical issues," one of the veterans' attorneys says. Other pending lawsuits, including several that have been brought against Agent Orange codefendant Monsanto because of environmental spills, also revolve around dioxin's possible health effects.

Both the veterans' group and the seven chemical companies named in the suit—Dow, Monsanto, Diamond Shamrock, Uniroyal, T.H. Agriculture and

Nutrition, Hercules, and Thompson Chemical—have viewed the scientific questions as pivotal. Each side, although convinced that its interpretation of the scientific data was correct, faced monumental difficulties in preparing to present interpretations of that data to a jury.

Dow, which took the most vocal position among the codefendants, has argued that according to "the bulk of the scientific literature . . . Agent Orange did not, would not, and could not have caused the health problems that have been alleged." Health problems that have been claimed include cancer, nerve, liver, and immune system disorders, birth defects, and chloracne. To back up the company's claim that, in man, nothing but

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chloracne can be clearly attributed to dioxin exposure, Dow scientists prepared a sizable compendium of the scientific literature on dioxin and put together a large and diverse team of outside medical and scientific experts and consultants. "It was a considerable effort that was very, very expensive," a Dow official says. The other defendants went through similar exercises. Monsanto, for example, assembled numerous documents into an electronic data bank—altogether mounting a legal and scientific effort that cost "seven figures at least," according to a company spokesman.

"We have what we believe is a strong—an unassailable—scientific base," says Dow's director of biomedical research James Saunders. "So why settle?" He says that the whole scientific and legal issue is too complex to risk having it misunderstood in the courtroom. "We anticipated a highly emotional trial. . . . The evidence would have been presented, but its impact on the jury would be . . . hard to say."

A key problem, he continues, is that among the several million men who served in Vietnam are many who are

suffering from various ills. A jury, seeing those ills, might easily sympathize with the apparent victims, but not be able to discern readily whether their problems could be accurately attributed to dioxin exposure, especially if the arguments about medical causes are too esoteric to follow. A jury, faced with months of testimony from scores of opposing expert witnesses, might not be heedful of the fine points of the scientific issue, according to Saunders. "Now that we have set the trial aside, I think we can deal with the issue more rationally."

Expert witnesses lined up to argue on behalf of the veterans also admit to having mixed feelings, including a sense of relief, at not being faced with a trial. The constant presence of attorneys in the midst of the broad scientific debate about dioxin has been a distraction, and there is some feeling that discussions have been constrained, according to Ellen Silbergeld, a neuroscientist with the Environmental Defense Fund, who was tapped as an expert witness by the veterans' attorneys. She says that some scientists refused to become witnesses because the scientific debate over dioxin has been so often "debased."

Veterans' attorney Thomas Henderson, who was responsible for the scientific component of the case, told *Science* shortly before the trial was scheduled to begin, "We have put together a group of responsible, dedicated, highly competent scientists . . . the whole spectrum. This has always been a 'David-and-Goliath' situation, but I believe the science is there." He now admits to feeling "disappointment" at not having an opportunity to air the medical and scientific issues. "The high degree of culpability of the chemical companies won't be as well known as it would have been with a 6-month-long trial," he contends. "But that's the nature of litigation."

Whether the settlement will have a good or bad effect on dioxin research is difficult to say. Silbergeld speculates that the scientific issues might be settled more readily now that less "is riding on the outcome." However, an opposite effect is possible, she says, if everyone simply decides the issue has been dealt with adequately.

The fact that the Agent Orange trial

was pending in various forms for 5 years "kept people studying dioxin—the trial forced research to be done," says Columbia University epidemiologist Maureen Hatch, another expert witness called by the veterans' attorneys. "Now

that it's not being adjudicated, it may have left a cloud hanging . . . and we're back to saying that all we know dioxin causes is chloracne. We might have gone beyond that." Hatch says that dioxin's potential role in causing birth defects

was to have been examined very carefully during the trial, but it is now left "hanging in the air. It's a whole new research area that needs work."

Had the trial gone forward, the veterans would have also tried to prove that Agent Orange was responsible for causing particular cancers, nervous system defects, and the skin rash called chloracne, in addition to birth defects. Because of court rulings, however, other potential health effects were omitted from consideration.

Various long-term studies, including several massive epidemiologic projects that the Centers for Disease Control (CDC) has under way or is planning, will attempt to address such issues. One CDC study about to begin is budgeted for \$57 million during its first 2 years and is considered the most complex study CDC has ever undertaken. Also, the U.S. Air Force Ranch Hand study, which has been interpreted in sometimes contradictory ways, also will be continuing (*Science*, 16 March, p. 1156).

The Veterans Administration, not a disinterested party in this matter, just has released a critical review of the scientific literature on dioxin's health effects, concluding that current information is "inadequate" to establish that exposure to dioxin causes "any serious irreversible health effects." However, on this key point the review waffles, noting that the studies also are not adequate to establish "the absence of any specific toxic effects," and thus dioxin's role in several serious disorders cannot be "ruled out."

Settlement without a trial poses another peculiar problem that is yet to be addressed. A \$180-million fund, which on 7 May began accumulating interest of about \$60,000 daily, is to be distributed to affected veterans and their families during the next 25 years. What scientific and medical criteria will be used, if any, for determining who will receive these funds is not clear. A trial, had it been won by the veterans, might have established what ills now could be attributed to dioxin and what other health problems could reasonably be anticipated.

These same questions still stand before the court. Henderson says that the group of veterans' attorneys will deal with this problem "scientifically" and with "compassion" before presenting its recommendations to the court. "There must be some scientific bases" for compensating the veterans, he says. The recommendations must be aired in a public hearing before Judge Weinstein, who ultimately is faced with making those decisions.—JEFFREY L. FOX

Can Fish Quota Save the Whales?

Differences between Japan and the United States over international controls on commercial whaling have been escalating. Last year the U.S. government reduced the catch permitted Japanese fishermen in U.S. waters in reaction to Japan's objection to a moratorium on commercial whaling voted by the International Whaling Commission (IWC). But a more serious encounter may be shaping and some observers say that the issue could add substantially to tensions in trade relations between the two countries.

The IWC, which is made up of 38 nations which have had a major interest in whaling, in 1982 approved a moratorium on commercial whaling to start at the end of 1985. Japan, Norway, and the U.S.S.R. have objections on file under which they reserve the right to continue whaling after the moratorium begins. Under pressure from Congress, the Reagan Administration last year exercised the option under U.S. law to cut the catches permitted foreign fishermen in U.S. waters to support conservation measures. The reduction of 100,000 tons amounted to about 10 percent of the Japanese quota. For the Japanese, who carry on major fishing operations in the North Pacific, the cut meant losses of an estimated \$45 million to \$50 million.

This year, no reductions in the quarterly quotas were announced in January and April. The Japanese government had strongly protested last year's cuts and asked the U.S. government not to link policy on whaling with fishing rights. So far, the Administration has not revealed its intentions, indicating that it is waiting to see what tack the Japanese take on whaling policy. If Japan should continue whaling after the moratorium begins, however, existing U.S. fishing legislation would apparently make a drastic reduction in the Japanese quota mandatory. A provision sponsored by Senator Bob Packwood (R-Ore.) and the late Senator Warren Magnuson, specifies that any country certified as undermining IWC measures will have its fishing quota cut by at least half.

The year and a half remaining before the moratorium is scheduled to go into effect is expected to be a period of hard bargaining with Japan and the other holdout nations. Japan takes more whales than any other nation—currently about 3700 a year. A majority of these are the small, fairly numerous minke whales hunted off the coast of Japan and in Antarctic waters. But Japanese whalers also take rarer species, including the sperm whale, which is on the endangered list. Japan will probably offer to make modifications of its whaling operations but is clearly resentful of what it sees as a lack of sympathy and understanding by the United States of the history of its whaling industry and the place of whale products in the Japanese diet and culture and is expected to ask for concessions.

Increasing attention on the possibility of sanctions through U.S. cuts in fishing allocations for Japan is anticipated. U.S. conservation groups are pushing for a strong linkage between whaling policy and fishing rights. Senator Packwood, who heads the Senate Commerce subcommittee on ocean policy, says he intends to pursue effective implementation of the moratorium and sees fishing allocations as a useful means of doing so. The U.S. fishing industry is not pleased with the linkage, complaining that fishing allocations have sometimes been traded off for concessions in other fields. Some observers predict that fish and, indirectly, whales will become bargaining chips in trade negotiations over such disputed trade items as beef, citrus fruit, autos, and high-technology products. The Reagan Administration has not declared its long-term view on linkage, but the next fishing allocations scheduled for announcement in July, which follows the annual IWC meeting in June, could provide a clue.—JOHN WALSH