

Dioxin exposure at Monsanto

SIR—Hay and Silbergeld urge a re-examination of the information about workers exposed to dioxin at the Monsanto plant in Nitro, West Virginia¹. They do not actually challenge the conclusions of two studies that there were no excesses of cancer or heart disease deaths among dioxin-exposed workers, but they convey the impression that the studies are seriously flawed.

In particular, they draw attention to the fact that four men classified as exposed to dioxin in one paper were classified as not exposed in the other. The first paper, which classified the men as exposed, defined exposure by the presence or history of chloracne², a disease known to be associated with dioxin. The other, which classified the men as not exposed, defined exposure by a history of work assignments in processes involving dioxin³. Neither measure is perfect, and they are not congruent. Although the differing classifications are disquieting, at least three of the cancer deaths are probably independent of dioxin exposure. Those three were lung cancer deaths among smokers; the fourth was from Hodgkin's disease, for which there is no strong evidence for association with dioxin. If the differing classifications for the four men are enough to destroy the conclusions reached by the authors of the studies, that analysis should be developed by Hay and Silbergeld.

From Monsanto records that they do not further identify, Hay and Silbergeld state that 19 workers who would be classified as exposed and who died from circulatory disease or cancer were not included in the second mortality study. They do not provide information about how they determined the men's exposure, the number of unexposed men who died from the same causes during the same time period, nor when the men died. If they died before 1955, they would not have been included in the study, which, because of records limitations, was restricted to men who left the company after that time. A telephone call to the authors might have clarified the reason that those men were not included. Whatever the outcome of such a call, it would not have contributed to the aura of conspiracy achieved by the sentence "No reason is given for not including those cases".

Workers exposed as a result of the 1949 explosion at Nitro are generally considered to have been more heavily exposed than workers involved in usual processes at the plant. Hay and Silbergeld, referring to a 1953 study⁴, contend that the basis for that conclusion was more severe chloracne among the accident-exposed workers. While chloracne was worse among those workers, a panoply of other health complaints — fatigue, incapacitating aches and pains, libido and potency problems — was also elevated, lending cre-

dence to the contention that accident-exposed workers were more heavily exposed. I am uncertain what point Hay and Silbergeld want to make as they labour over the conjecture that there may have been no differences in exposure levels, but they follow that effort with criticism of the authors of the mortality studies for separating the two groups of men in their studies. The criticism is misplaced. While one paper⁵ was limited to workers involved in the aftermath of the 1949 accident, the other⁶ included all hourly workers who terminated their employment after 1955, whether or not involved in the 1949 accident.

Having found no evidence of excess cancer in the Nitro workers, Hay and Silbergeld turn the idea of dose-response relationships on its head and suggest that diseases such as cancer "may be expected" in people exposed to "lower and more chronic exposures". References offered in support of that idea are two books that contain data both suggesting and not suggesting a link between dioxin and human cancer and two papers associating cancer in herbicide sprayers with dioxin. The herbicide sprayers characterized as chronically exposed were exposed only during one or two months a year⁷, for a median total exposure time of 42 days. Studies of another population, which included more than 1,500 sprayers who had been exposed for at least 12 months, found no cancer excess⁸. Furthermore, some Nitro employees worked for years in production processes that involved dioxin and some, not exposed through the explosion, developed chloracne⁹. Those men were surely chronically exposed to dioxin, many were included in the Zack and Gaffey⁶ study, and there is no cancer excess. The hypothesis that low-level, intermittent exposures bear more risk than higher-level exposures requires substantiation.

Hay and Silbergeld's penultimate paragraph refers to a health survey¹⁰ as support of a possible connection between dioxin and an "excess of cardiovascular-related deaths". The health survey presents no new data about mortality; it does refer to an excess of cardiovascular deaths in Monsanto workers already reported by Zack and Gaffey⁶. An editorial that accompanied publication of the health survey suggested that the health survey might include some evidence for an excess of myocardial infarctions (not deaths) among men who had had chloracne¹¹, but that the appropriate analysis is wanting. Finally, the mortality study that reported the excess of cardiovascular-related deaths in Monsanto workers found no difference in death rates from the cause between workers exposed and not exposed to dioxin⁶, and the number of cardiovascular deaths among chloracne-stricken workers was less than 75 per cent of the

expected number¹².

Hay and Silbergeld criticize studies that use chloracne as the criterion of exposure. They are on firm ground when they say that the disease is a dependent variable of exposure and that epidemiological studies usually use some independent measure, such as work histories, as the criterion for exposure. However, they raise no criticism of the health survey¹⁰ for depending on chloracne as a measure of exposure. Apparently, a double standard is used, studies that cannot be interpreted to show excess deaths being held to a higher one.

In Hay and Silbergeld's words, "the epidemiological picture at Monsanto remains confused". The picture is more unclear than anyone would desire, but it is not quite so confused as they have it. Their letter shows that it is possible to locate flaws and select studies to support an argument that dioxin is possibly a scourge. Equally, it is possible to read the literature and arrive at a cautious conclusion that dioxin has not caused early death and cancer in heavily exposed workers. That conclusion, which is widely accepted¹³ and draws on information from dozens of studies done in the past decade, might lift some anxiety from people who have been environmentally exposed to lower levels of dioxin.

MICHAEL GOUGH

Congress of the United States,
Office of Technology Assessment,
Washington, DC 20510, USA

1. Hay, A. & Silbergeld, E. *Monro J. Rep.* 1983 (1983).
2. Zack, J.A. & Siskind, R.R. *J. occup. Med.* 21, 11 (1979).
3. Zack, J.A. & Gaffey, W.R. in *Human and Environmental Risks of Chlorinated Dioxins and Related Compounds* (eds Tschier, R.E., Young, A.L. & Gray, A.P.) 575 (Plenum, New York, 1983).
4. Attkin, R., Davis, A. & Siskind, R.R. *Report on a Clinical and Environmental Survey, Monsanto Chemical Co., Nitro, W. Va. by the Kettering Laboratory (Jill) Cincinnati, Ohio, 1953*.
5. Smith, A. et al. *J. nat. Cancer Inst.* (USA) 71, 111 (1984).
6. Moore, M. et al. *Am. J. Ind. Med.* 5, 161 (1984).
7. Moody, L. et al. *Am. J. Ind. Med.* 5, 157 (1984).
8. *Public Health Risks of the Dioxins* (eds Lorraine, W.W. (Kluwer, Los Alamos, California, 1984).

AIDS

SIR—Misinformation on acquired immune deficiency syndrome (AIDS) continues to abound and Ian Davidson's comment (*Nature* 317, 666; 1985) is another example.

It is wrong on two counts: (1) It is perfectly possible to be promiscuous and have little risk of contracting AIDS, providing one avoids certain high-risk sexual practices; (2) Non-promiscuity does not guarantee that one will not contract AIDS. Certain groups are still at risk, for example wives of gay or bisexual men, and intravenous drug abusers.

I do not know if chastity has replaced death as the "great unmentionable", but fiction seems to have replaced fact when it comes to the truth about AIDS.

PAUL CUMBLETON

Reading Area AIDS Support Group,
PO Box 75,
Reading, Berks. UK



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

MEMORANDUM

DATE: October 20, 1994

FROM: Cate Jenkins, Ph.D.
Environmental Scientist
Waste Identification Branch
Characterization and Assessment Division, OSW
260-4792 Mail Code 5304 *C. Jenkins*

TO: Andrew Moran
Associate General Counsel
General Law Branch
Office of General Counsel
Mail Code 2379

SUBJECT: Threatening messages from Don Nantkes regarding reversal of determination that testimony not in interest of EPA

I am requesting clarification from you concerning a series of three voice mail messages I received on October 18 from Don Nantkes of your office. These messages concerned an apparent misunderstanding regarding my willingness to testify for either the plaintiffs or defendants in a case that does not involve EPA.

On October 18, you faxed me a letter from yourself to the counsel for the plaintiffs in the case. This letter stated that you served as the Agency designee who determines whether testimony would clearly be in the interests of EPA. You stated that providing me as a witness could not be found to be clearly in the interests of EPA.

It is my understanding, both from your letter and from a reading of the regulations contained in 40 C.F.R. Part 2 that it is in fact EPA, not myself, who would make such a determination as to testifying, if the testimony concerned information obtained in the course of my official duties.

My confusion stems from the fact that the telephone messages from Mr. Nantkes stated that I had broken a commitment to him that I would not be testifying on behalf of the defendant in the case. I had never made any such commitment, since I had already been informed that only EPA could make such a determination. I had told Mr. Nantkes that it was my understanding that if EPA refused to provide me as a witness to the plaintiffs, then obviously the defendants could not use



Printed on Recycled Paper

me as a witness, since witness have to be made available to both sides in a case. I said that I also assumed that EPA would also refuse to provide me as a witness to the defense as well. I had told Mr. Nantkes that any statements on my part regarding my availability to testify were obviously irrelevant.

In his first message, Mr. Nantkes incorrectly claimed that I had reneged on an agreement not to testify for the defense. He then threatened that if I did not affirm some commitment not to testify on behalf of the defense in this litigation, he would call up the plaintiff's counsel and tell him that they were at complete liberty to reschedule the deposition of myself. (I did not have a chance to respond to this voice mail message.)

Mr. Nantkes left me a second message, that said that since he had not heard from me, he was going to call the plaintiff's counsel. He said that unless I heard from him, he was certain that I could assume that I was under an existing, valid subpoena to appear at the deposition, as scheduled on October 19, and I would have to appear. In other words, he was saying that your letter to the plaintiffs in this case would be invalidated unless I made some type of verbal commitment to him. He then said that he would get back to me with any news. (I was also unable to respond to this message.)

Mr. Nantkes left a third voice mail message for me, stating that he had spoken to the plaintiff's counsel. He said that the only reason I was not now required to show up for the deposition on October 19 was that plaintiff's counsel had already cancelled some reservations. He stated that plaintiff's counsel was extremely angry, and would pursue every remedy they possibly can in this matter. Mr. Nantkes said this was the upshot of my attempt to add what he called "that little qualification." (I am unsure of the meaning of his last statement.)

The messages from Mr. Nantkes were insulting, threatening, and confusing as they contradicted your letter. Does Mr. Nantkes have the authority to reverse the decision stated in your letter, as he represented himself to me? I would very much appreciate your clarification in this matter. If you are interested, I have saved the three voice mail messages, and can play them back to you.

cc: EPA Inspector General
Ed Abrams, Waste Identification Branch, CAD