

MONNYE R. GROSS
ATTORNEY & COUNSELOR AT LAW
P.O. BOX 11835
CLAYTON, MISSOURI 63105
314-991-0607

RECEIVED JUL 11 1990

JURIS DOCTOR, MASTER OF
LAWS, LL.M. IN TAXATION

ADMITTED IN ILLINOIS,
PENNSYLVANIA & MISSOURI

July 5, 1990

Peter Montague, Ph.D., Editor
Environmental Research Foundation
P.O. Box 3541
Princeton, NJ 08543-3541

Re: William R. Gaffey, Ph.D.

Dear Dr. Montague:

Please be advised that I represent William R. Gaffey, Ph.D.,
President of William R. Gaffey, Inc.

In your newsletter "Rachel's Hazardous Waste News" #171 dated
March 7, 1990 you published several false and defamatory
statements about the work that William R. Gaffey and Judy Zack
allegedly did in connection with the health effect of
occupational dioxin exposure. Mr. Gaffey demonstrated the
falsehoods to you by letters dated April 4, 1990, April 23, 1990
and May 11, 1990, and included supporting data. To date he has
received neither a reply to his letter of May 11, 1990 nor a
retraction.

Liability for trade libel results from the publication of false
and defamatory statements about a person's business, trade or
profession. Specifically, the tort of defamation is a false
communication which injures a person's reputation. False
statements that disparage another in the conduct of his business,
trade or profession give rise to liability without proof of
special damages. Mr. Gaffey may recover damages from you for
defamation even without proving actual loss of trade. In
addition, Mr. Gaffey may recover damages for the loss of business
that he can establish with reasonable certainty. Statements, such
as those in your newsletter, which interfere with Mr. Gaffey's
prospective and existing business and contractual relationships
also constitute tortious conduct for which you may be held
liable. Furthermore, the tort of disparagement or injurious
falsehood imposes liability for the publication of a false
statement that results in harm to another's interests which have
pecuniary value. The torts of defamation, interference with
prospective and existing business and contractual relationships
and disparagement involve the imposition of liability for
injuries sustained through publication of false statements.

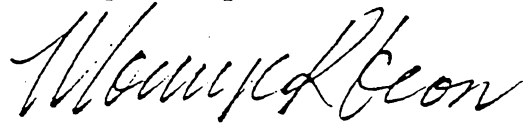
EXHIBIT

Peter Montague, Ph.D., Editor
July 5, 1990
Page 2

Mr. Gaffey has authorized me to take whatever legal action is necessary to protect and restore his reputation and protect his economic interests. In order to avoid litigation which will be expensive and embarrassing to you, Mr. Gaffey is willing to settle this matter if you publish a retraction and pay his legal fees of One Hundred and Fifty Dollars (\$150.00), which have thus far accrued. If the retraction and payment is not forthwith in coming, appropriate legal action will be taken to protect my client from the torts of defamation, disparagement or injurious falsehood and interference with prospective and existing contractual relations. Please be advised that I intend to fully protect my client's interests, to vigorously enforce all of my client's rights and to diligently pursue all legal remedies.

An immediate retraction and payment of Mr. Gaffey's legal fees will be appreciated.

Very truly,

A handwritten signature in cursive script, appearing to read "Monnye R. Gross".

Monnye R. Gross

MRG/ks

Dioxin--Part 1

DIOXINS AND CANCER: FRAUDULENT STUDIES

For years, industry scientists have been claiming there's no evidence that dioxins cause cancer in humans. Now there is mounting evidence that such claims rely heavily on studies that are fraudulent. Two companies recently accused of producing fraudulent dioxin-and-health data are Monsanto and BASF.

Monsanto

A scientist with U.S. Environmental Protection Agency (EPA) says Monsanto falsified data in important studies that Monsanto used to support its claim that dioxin does not cause cancer in humans. Dr. Cate Jenkins, a chemist in EPA's Office of Solid Waste and Emergency Response, says EPA itself relied upon Monsanto's fraudulent data in setting health standards for dioxin, and Jenkins has asked the EPA's Science Advisory Board to reopen the matter of EPA's dioxin standards, to take a fresh look at available data.¹

Two important sources of dioxins in the environment are old chemical dumps and the incineration of municipal solid wastes,² which is why EPA is concerned about allowable levels of human exposures to dioxin.

BASF

The British technical journal, *New Scientist*, says, "A new analysis by a West German epidemiologist may have established the first clearcut evidence of a direct link between exposure to dioxins and cancer in humans. Friedemann Rohleder, an independent specialist, has produced a report detailing an unexpectedly high incidence of cancer among workers exposed to dioxins during an industrial accident at a chemicals plant in 1953."³

"The plant, operated by the West German company BASF, made trichlorophenol. Rohleder claims the company presented the data in a way that disguised the cancers," says *New Scientist*.

Background

Each of these claims of fraud relates to an industrial accident in which workers were exposed to dioxins; follow-up medical studies funded by the responsible companies have been published in mainstream scientific journals, claiming to show that no excess cancers have occurred in the dioxin-exposed workers. In fact, excess cancers *have* occurred, but

it appears that the data have been manipulated to hide the facts.

The Monsanto Case

In 1949, an explosion occurred at a Monsanto chemical factory in Nitro, West Virginia; as a result, many workers in the plant were exposed to the herbicide 2,4,5-T, which was contaminated with dioxin. (This herbicide was later the principal component of Agent Orange, the chemical defoliant used by the U.S. in Viet Nam.) In subsequent years, two Monsanto scientists, J.A. Zack and R. W. Gaffey, studied the exposed workers, comparing their health against the health of a similar group of workers who were not exposed to dioxin or 2,4,5-T.⁴

According to court documents attached to the EPA memo, "Zack and Gaffey deliberately and knowingly omitted 5 deaths from the exposed group and took four workers who had been exposed and put these workers in the unexposed group, serving, of course, to decrease the death rate in the exposed group and increase the death rate in the unexposed group."

Other studies of this same accident were also fraudulent, according to the same court documents, including a study by R.R. Suskind published in the *Journal of the American Medical Association*.⁵ "This published study of the workers exposed in the 1949 accident reported only 14 cancers in the exposed group and 6 in the unexposed group (a smaller cohort). However, the medical records produced [by Monsanto] to the Plaintiffs conclusively prove gross miscalculations and omissions... there were 28 cancers in the group that had been exposed to dioxins in 1949 as opposed to only 2 cancers in the unexposed group." Mr. Suskind published two other reports^{6,7} on the same accident, using his same data, to reach the conclusion that dioxin does not cause cancer.

The BASF Case

On the night of November 17, 1953, a runaway chemical reaction spewed dioxin-contaminated chemicals over workers and community residents of two small German cities, Mannheim and Ludwigshafen. Subsequently, an epidemiological study was used to deny workers any compensation for ailments they claimed they suffered as a result of exposure. In keeping with German law, the workers retained their own expert to review the data. Their expert, Friedemann Rohleder, received the data from the German government but found, to his surprise, that all the data

actually came from the BASF company itself. He analyzed the data and found that some workers suffering from chloracne, which is universally acknowledged to be evidence of high exposure to dioxin, had been placed in the low-exposure or non-exposed group. He found evidence of "diluting" the exposed group with 20 plant supervisory staff who, Rohleder believes, were not exposed. When Rohleder omitted the 20 supervisory staff, his analysis revealed statistically significant increases in two groups of cancers: cancers of the respiratory organs (lungs, trachea, etc.), and cancers of the digestive tract. "This analysis adds further evidence to an association between dioxin exposure and human malignancy," Rohleder told *New Scientist*.

[To be continued.]

¹Cate Jenkins, "Memo to Raymond Loehr: Newly Revealed Fraud by Monsanto in an Epidemiological Study Used by EPA to Assess Human Health Effects from Dioxins," dated February 23, 1990. Jenkins is a chemist with the Waste Characterization Branch (OS 332), Characterization and Assessment Division, U.S. EPA, 401 M St., SW, Washington, DC 20460. Loehr is Chairperson of the Executive Committee of the Science Advisory Board (A-101), Office of the Administrator, U.S. EPA, 401 M St., SW, Washington, DC 20460. The Jenkins memo has attached to it 25 pages of a brief filed in Case No. 5-88-0420, in the Appellate Court of Illinois, Fifth District by attorneys suing Monsanto on behalf of plaintiffs who say they were harmed when a Norfolk and Western railroad tank car derailed, spilling 19,000 gallons of a Monsanto chemical called "OCP-crude" into the community of Sturgeon, Missouri the night of January 10, 1979. Chief attorney for the plaintiffs is Rex Carr, 412 Missouri Avenue, East St. Louis, IL 62201; phone (618) 274-0434. Our thanks to Margo Blackwell, People Against the Incinerator (PATI), Bloomington, Indiana, and to EPA official William Sanjour, both of whom independently sent us the information about

Monsanto. We can mail copies of the Jenkins memo and attachments (28 pages) for \$14.00, which covers our actual costs of photocopying, handling and mailing.

²Oak Ridge National Laboratory. *Toxicological Profile for 2,3,7,8-Tetrachlorodibenzo-p-dioxin* [ATSDR/TP-88/23; PB89-214522] (Springfield, VA: National Technical Information Service, June, 1989), pg. 22, identifies dumps and incinerators as "the important sources of 2,3,7,8-TCDD exposure to the general population." This is the Agency for Toxic Substances and Disease Registry [ATSDR] toxicological profile for dioxin (See *RHWN* #169.)

³ Stephanie Wanchinski, "New Analysis links dioxin to cancer," *New Scientist* October 28, 1989, pg. 24. Thanks to Paul Connett of Work on Waste USA, we have a copy of Friedemann Rohleder's paper, which he presented in late September at a dioxin conference in Toronto, Ontario; Rohleder's paper is entitled "Dioxins and Cancer Mortality--Reanalysis of the BASF Cohort." We can mail you the 14-page Rohleder paper for \$7.00, or you can request a copy directly from the author: Friedemann Rohleder, Friedrich - Hebel Str. 13, 1712 Werne, West Germany.

⁴ Zack, J.A., and W. R. Gaffey, "A Mortality Study Of Workers Employed At The Monsanto Company Plant In Nitro, West Virginia," *Environmental Science Research*, Vol. 26 (1983), pgs. 575-591.

⁵R.R. Suskind, and V.S. Hertzberg, "Human Health Effects Of 2,4,5-T And Its Toxic Contaminants," *Journal of the American Medical Association*, Vol. 251, No. 18 (1984), pgs. 2372-2380.

⁶R.R. Suskind, "Chloracne, The Hallmark Of Dioxin Intoxication," *Scandinavian Journal of Work, Environment and Health*, Vol. 11, No. 3 (1985), pgs. 165-171.

⁷R.R. Suskind, "Long-Term Health Effects Of Exposure To 2,4,5-T And/Or Its Contaminants," *Chemosphere*, Vol. 12, No. 4-5 (1983), pg. 769.

Rachel's Hazardous Waste News is published weekly by Environmental Research Foundation, P.O. Box 3541, Princeton, NJ 08543. Editor: Peter Montague, Ph.D.; Associate Editor: Maria B. Pellerano; Assistant Editor: Annette Eubank; West Coast Editor: Tim Montague; subscriptions: Abigail Allen, Office Manager. Subscription rates: \$25 per year for individuals and citizen groups, \$50 for government agencies, \$8 for students and seniors, \$250 for businesses and professionals. In Canada and Mexico, add \$4.00; in all other countries, add \$11.00. All payments in U.S. funds. Printed on 100% Recycled Paper

SUBSCRIPTION ORDER FORM

Name:

Address:

State and Zip:

Environmental Research Foundation
P.O. Box 3541
Princeton, NJ 08543-3541

ADDRESS CORRECTION REQUESTED

TO:

FIRST-CLASS MAIL
U.S. POSTAGE
PAID
Princeton, NJ
Permit No. 434

Environmental Research Foundation
231 Nassau Street
P.O. Box 3541
Princeton, NJ 08543-3541

(609) 683-0707

July 18, 1990

Mr. Monnye R. Gross
P.O. Box 11835
Clayton, MO 63105

Dear Mr. Gross,

Thank you for your letter of July 5, 1990. Please convey to Mr. Gaffey my apologies for the delay that has ensued since he last wrote to me directly. His letter to me of May 11, 1990, contained substantial attachments that I had to try to digest, as well as suggestions and statements that I had to try to follow and confirm.

Would you please write me again, after conferring with Mr. Gaffey, telling me what you and he would consider a satisfactory phrasing of the retraction he wishes me to print? Although it may seem clear to you exactly which words in *Rachel's Hazardous Waste News* #171 are the subject of dispute between Mr. Gaffey and myself, it is not entirely clear to me precisely which words he would like me to retract. Precise clarification of Mr. Gaffey's wishes in this matter is essential to a satisfactory resolution.

In addition, may I ask for clarification of another issue that continues to confuse me? Monsanto issued a press release October 9, 1980, carrying a headline, "STUDY FAILS TO LINK AGENT ORANGE TO DEATHS OF INDUSTRIAL WORKERS." I am enclosing a copy of the press release. The press release announces results of a study by Zack and Suskind. What confuses me is that all of the numbers in the press release would lead one to believe that the press release was describing a study later published not under the names Zack and Suskind but under the names Zack and Gaffey. It would help me understand who said what if Mr. Gaffey could throw some light on the study that the press release describes and his relationship to it (if any).

Sincerely yours,

Peter Montague

EXHIBIT

M

NEWS

FOR RELEASE

IMMEDIATELY

Monsanto

D. R. Bishop
(314) 694-2891
PUBLIC RELATIONS DEPARTMENT
Monsanto Company
800 N. Lindbergh Boulevard
St. Louis, Missouri 63166

STUDY FAILS TO LINK
AGENT ORANGE TO DEATHS
OF INDUSTRIAL WORKERS

ST. LOUIS, Oct. 9 -- Monsanto Company today reported that no apparent relationship exists between TCDD, the toxic dioxin contaminant in "Agent Orange," and the cause of death of 58 employees potentially exposed to it during 2,4,5-T herbicide production at the company's Nitro, W. Va., plant.

This finding was among those reached in a new study, co-authored by Monsanto epidemiologist Judith A. Zack and Raymond R. Suskind, M.D., of the University of Cincinnati Medical Center. Their investigation examined the cause of death of all hourly workers who had been active employees of the plant for one or more years between 1955 and 1977 and have since died from any and all causes. The entire group was successfully traced and all deaths verified by death certificate.

Monsanto produced 2,4,5-T at its Nitro plant from 1948 until 1969. It is currently the subject of widespread controversy centering on its use in the defoliant Agent Orange during the Vietnam War.

This is the second major effort undertaken to examine the mortality (cause of death) of Nitro plant workers, either exposed or potentially exposed to TCDD. Mrs. Zack and Dr. Suskind earlier this year co-authored a separate but related study of employees who had experienced high peak exposure

to TCDD during an industrial accident at the plant in 1949. The results of that investigation, published in the January, 1980 issue of The Journal of Occupational Medicine, indicated no excess in total deaths or in deaths from cancer or cardiovascular disease.

In this larger, follow-up effort, the mortality experience of the total Nitro plant workforce was analyzed by the modified life-table method using the U.S. population as the standard. Of the 884 men identified for study, 721 (82%) were verified as still alive and 163 (18%) were confirmed dead by death certificates. The study found no statistically significant excess in total deaths or deaths due to cancer or disease of the nervous system, circulatory system, respiratory system or digestive system.

The study did confirm and quantify an apparent excess in bladder cancer among Nitro Plant workers (nine observed vs 0.91 expected) which has been known for many years. This finding reflects the established and previously documented association between exposure to Para-aminobiphenyl (PAB) and cancer in man. PAB was used at Nitro from 1941 through 1952, for use as a rubber antioxidant and dye intermediate. Its use was discontinued when its cancer-causing potential was confirmed.

The authors pointed out that an intensive screening program was instituted by the company about 1955 to examine, on a continuing basis, all workers exposed to this chemical.

Seven PAB-related deaths from bladder cancer have occurred among Nitro Plant employees enrolled in this program over these 25 years. These seven deaths are included in this study.

A review of the work history records of the 163 decedents further revealed that 58 (35.6%) had been exposed to 2,4,5-T and potentially to TCDD. One hundred four (63.8%) were considered non-exposed and the exposure of one decedent was not determined. The mortality experiences of these two subgroups were then compared using the proportional mortality method. This was done to test whether any relationship existed between potential TCDD exposure and proportional mortality. No such relationship was observed nor were any unusual patterns of mortality found in this exercise other than the PAB-related deaths described earlier.

The expected number of deaths in the 2,4,5-T subgroup was calculated on the basis of the percentage of deaths from various causes in the U.S. general population. Specifically, cancer deaths among 2,4,5-T workers (nine observed versus 10.94 expected) were found to be lower than in the non-exposed group (25 observed versus 20.43 expected).

Deaths due to disease of the nervous system, respiratory system and digestive system were also found to be lower than one would expect to find in a group of this size.

While not statistically significant, deaths due to disease of the circulatory system (largely arteriosclerotic heart disease) were elevated at 31 versus 26.48 expected.

The analysis of the total Nitro plant population found a similar excess in deaths from arteriosclerosis. In the discussion section, the authors pointed out that these excesses most likely reflect the higher mortality from heart disease which has been observed for Charleston and Kanawha County, W. Va.

A third study, based on health information gathered from extensive physical examinations of over 400 present and former Nitro plant employees is currently being conducted solely by Dr. Suskind and his medical team from the University of Cincinnati's Institute of Environmental Health.

Included in this ongoing study are both those workers exposed during the 1949 accident as well as those exposed during normal 2,4,5-T operations between 1948 and 1969 when the unit was shut down. A control group of employees who worked in other areas of the plant during that time frame is also being studied for comparative purposes. The results of this study are expected later this year and will be submitted for publication in an appropriate medical journal.

MONNYE R. GROSS
ATTORNEY & COUNSELOR AT LAW
P.O. BOX 11835
CLAYTON, MISSOURI 63105
314-991-0607

JURIS DOCTOR, MASTER OF
LAWS, LL.M. IN TAXATION

ADMITTED IN ILLINOIS,
PENNSYLVANIA & MISSOURI

July 31, 1990

Peter Montague, Ph.D., Editor
Environmental Research Foundation
P.O. Box 3541
Princeton, NJ 08543-3541

Re: William R. Gaffey, Ph.D.

Dear Dr. Montague:

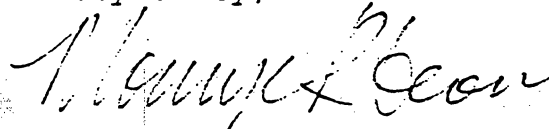
Thank you for your letter dated July 18, 1990, in which you agreed to print a retraction regarding William R. Gaffey, Ph.D.

Dr. Gaffey has forwarded to me the retraction and clarification that you requested about the Monsanto press release.

However, before sending you the retraction and clarification, please send a check in the amount of One Hundred and Fifty Dollars (\$150.00) to cover Dr. Gaffey's legal fees. Dr. Gaffey is unwilling to settle this matter unless he receives a satisfactory retraction and payment of his legal fees. If payment is not received by August 17, 1990 followed by an immediate retraction, which will be forwarded to you upon receipt of this payment, appropriate legal action will be taken to protect Dr. Gaffey from the torts of defamation, disparagement or injurious falsehood and interference with prospective and existing contractual relations. Please be advised that Dr. Gaffey has authorized me to vigorously enforce all of his legal rights and remedies in order to rectify his good name.

Thank you for your attention to this matter. An immediate payment of Dr. Gaffey's legal fees followed by a suitable retraction will settle this case.

Very truly,



Monnye R. Gross

MRG/ks



Environmental Research Foundation

231 Nassau Street
P.O. Box 3541
Princeton, NJ 08543-3541

(609) 683-0707

August 8, 1990

Mr. Monnye R. Gross
P.O. Box 11835
Clayton, MO 63105

Dear Mr. Gross,

Thank you for your letter of July 31, 1990.

Please re-read my letter to you dated July 18, 1990. In that letter I certainly did not agree to print a retraction.

Since you refuse to provide me with a clarification of the exact phrase or phrases that Mr. Gaffey finds objectionable, I must refer back to his letter to me dated April 23, 1990, in which he said he wanted me to retract two items: (1) an "allegation" about "fraud" and (2) "false statements about what Zack and I did." I do not know what "false statements" Mr. Gaffey is referring to, so I will have to ignore that portion of Mr. Gaffey's April 23 letter until I receive further clarification from you or from Mr. Gaffey.

Here I will deal only with the allegation of fraud.

The allegation of "fraud" that Mr. Gaffey cites in his letter appeared in a quotation that I printed and attributed (100% accurately) to attorney Rex Carr.

Mr. Carr made two claims regarding what Zack/Gaffey did in their study entitled, "A Mortality Study of Workers Employed at the Monsanto Company Plant in Nitro, West Virginia":

(a) Mr. Carr claimed that Zack/Gaffey deliberately and knowingly omitted five deaths from the exposed group;

(b) Mr. Carr claimed that Zack/Gaffey deliberately and knowingly took four workers who had been exposed and put these workers in the unexposed group, serving to decrease the death rate in the exposed group and increase the death rate in the unexposed group.

Mr. Carr concludes that these actions by Zack/Gaffey constitute "fraud."

EXHIBIT

My dictionary says that fraud is "something said or done to deceive...." and the same dictionary says that "to deceive" means "to make (a person) believe what is not true, to mislead."

So the question is, did Mr. Gaffey knowingly and deliberately do something to make (a person) believe something that is not true in either of the matters Mr. Carr cites? If the answer is "yes" in either case, then I must conclude that Mr. Carr is justified in saying what he said, in which case I feel I owe Mr. Gaffey neither an apology nor a retraction.

Regarding Mr. Carr's first point, I believe Zack/Gaffey did omit five deaths from the exposed group but I am not yet sure in my own mind whether this omission was justified or not. I am continuing to gather material about this matter and will reach a conclusion when more information becomes available to me. (More on this below.)

Regarding Mr. Carr's second point, I believe Mr. Carr is correct in stating that 4 individuals who were labeled "not exposed to 2,4,5-T" by Zack/Gaffey had, in fact, been heavily exposed to 2,4,5-T during the 1949 accident at the Nitro plant. I believe Zack/Gaffey knew these individuals had been heavily exposed because they used the term "TCDD exposure" to describe the condition of these four individuals (and others who lived through the accident): "The workers involved in that incident had presumed TCDD exposure as evidenced by chloracne." (pg. 590) Furthermore, according to published information, Ms. Zack has admitted in a court of law that the four workers listed in the two different studies are the same four workers.¹

Zack/Gaffey did not mention anywhere in their published article that they were including four workers with "presumed TCDD exposure" (pg. 590) in Table 11, which is a table labeled "not exposed to 2,4,5-T" (pg. 589).

I therefore conclude that Zack/Gaffey deliberately and knowingly took four workers who had been heavily exposed and put these workers in the "unexposed" group, serving to decrease the death rate in the exposed group and increase the death rate in the unexposed group, which is precisely what Mr. Carr accused them of doing in the sentences I quoted in #171. I believe Zack/Gaffey had every opportunity to tell their readers that they had done this, and to include whatever justification they might have offered for doing this, but instead they chose to remain silent on the matter and thus they chose to allow their readers to form the impression that

Zack/Gaffey had no reason to believe anyone in Table 11 had suffered substantial exposure to 2,4,5-T. This causes me to believe firmly that Zack/Gaffey tried to make their readers believe that something was true when it was actually untrue and they knew it was untrue; in short, I believe they willfully tried to deceive and mislead their readers, constituting a fraud.

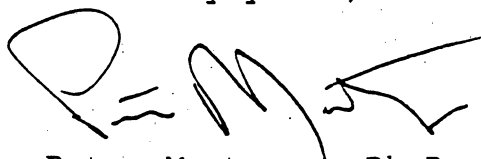
I therefore believe Mr. Carr had adequate justification for writing what he wrote. As a journalist, I have both a right and an obligation to report such matters. I am also aware that other journalists have quoted Mr. Carr's use of the term "fraud" in describing the Zack/Gaffey study.² Furthermore, I notice that other scientists have called for a complete reevaluation of the Monsanto data because they noted that the four workers were termed "not exposed" in one Monsanto study (Zack/Gaffey) but were listed as "exposed" in the Zack/Suskind study; these scientists further allege that Zack/Gaffey omitted 19 individuals who died of circulatory disease or of cancer while in the employ of Monsanto "and who met the criteria for inclusion in the exposed group" but were, for some unexplained reason, omitted entirely by Zack/Gaffey.¹ As I try to learn more about these 19 individuals, I intend also to learn more about the five individuals mentioned by Mr. Carr in the quotation that I printed in #171.

Mr. Gaffey may challenge my right of free speech if he so chooses, but such a challenge would clearly be nothing more than harassment, since Mr. Gaffey knows that I have excellent reasons for believing that Mr. Carr was justified in saying what he said. Furthermore, both you and Mr. Gaffey surely understand that I have a fundamental Constitutional right to reprint a quotation from Mr. Carr's legal brief. Given these facts, your initiation of a lawsuit could not serve any purpose other than harassment.

Naturally, I intend to defend myself with great vigor. I will not take Mr. Gaffey's harassment lightly, and I will respond to it in every way the law provides. This is clearly an unwarranted attempt to restrict my first amendment rights, and to frighten me away from pursuing my obligation as a journalist to print allegations of scientific fraud. I am not easily frightened. I believe the exposure of fraud in science is an important service that journalists must provide their readers, since the public health consequences of scientific fraud can be very great indeed (and, in this particular case, appear to be extraordinarily so, since U.S. Environmental Protection Agency says it has relied upon the Zack/Gaffey study to establish standards for human exposures to dioxin).

It goes without saying that I have no intention of paying Mr. Gaffey, or you, any money, so you can stop suggesting that I do so. Further, I request that you advise Mr. Gaffey that he should stop harassing me. It is he who will find litigation costly and embarrassing, if he chooses to initiate it, not me. Mr. Gaffey should know that the American Civil Liberties Union has agreed to defend me if Mr. Gaffey initiates a lawsuit because they have reviewed this matter in detail and have concluded that I acted properly, and entirely within my Constitutional rights, in printing what I printed; their representation will cost me nothing. As for embarrassing me, Mr. Gaffey will be disappointed on that count as well; far from being embarrassed, I am proud of the small part I have played in bringing this matter to light. My readers, and my journalistic and scientific colleagues across the country, will follow the proceedings with abiding interest if Mr. Gaffey initiates a lawsuit, and I will take pains to keep them all apprised. After all, it is Mr. Gaffey who has invented a new meaning ("not exposed") for a common English word ("exposed"); I am not embarrassed to label this invention a fraud. My advice to you, as Mr. Gaffey's attorney, is that you should learn more about Mr. Gaffey's past before you suggest that he has been libeled in my newspaper. It is evident from the information about Mr. Gaffey's work that has appeared in print elsewhere, and that resides in the *Kemner* trial transcript, that I merely scratched the surface in #171. Before you initiate a lawsuit against me on behalf of Mr. Gaffey, ask yourself why Mr. Gaffey was not called as a witness by Monsanto in *Kemner*.

Sincerely yours,



Peter Montague, Ph.D.

Attachments: Photocopies of the two articles cited below.

¹ Alastair Hay and Ellen Silbergeld, "Assessing the Risk of Dioxin Exposure," *Nature* Vol. 315 (May, 1985), pgs. 102-103.

² Carol Van Strum and Paul Merrell, "Dioxin Human Health Damage: Damaged Data?" *Journal of Pesticide Reform* Vol. 10 No. 1 (Spring, 1990), pgs. 8-12. I suggest you read the footnotes carefully, and bear in mind that Mr. Merrell is an attorney.

Nature Vol. 319, 12 Dec. 1985

CORRESPONDENCE

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 Virginia. 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 chloracne¹, 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 dioxin². 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 study³, 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 paper⁴ was limited to workers involved in the aftermath of the 1949 accident, the other⁵ 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 year⁶, 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 excess⁷. Furthermore, some Nitro employees worked for years in production processes that involved dioxin and some, not exposed through the explosion, developed chloracne⁸. Those men were surely chronically exposed to dioxin, many were included in the Zack and Gaffey⁵ 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 survey⁹ 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 Gaffey⁵. 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 chloracne¹⁰, 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 dioxin⁵, and the number of cardiovascular deaths among chloracne-stricken workers was less than 75 per cent of the

expected number⁷.

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 survey⁹ 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 accepted¹¹ 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. *Nature* 319, 602 (1985).
2. Zack, J.A. & Seshand, R.R. *J. occup. Med.* 22, 11 (1980).
3. Zuck, J.A. & Gaffey, W.R. in *Human and Environmental Risks of Chlorinated Dioxins and Related Compounds* (eds Tether, R.E., Young, A.L. & Gray, A.F.) 575 (Plenum, New York, 1983).
4. Atkin, R., Davis, A. & Seshand, R.R. *Report on a Clinical and Environmental Survey Monsanto Chemical Co. Nitro, W. Va. by the Lettering Laboratory (Unit) Cincinnati, Ohio, 1953*.
5. Smith, A. et al. *J. nat. Cancer Inst. (USA)* 75, 111 (1984).
6. Moses, M. et al. *Am. J. Ind. Med.* 5, 161 (1984).
7. Mowdy, L. et al. *Am. J. Ind. Med.* 3, 157 (1984).
8. *Public Health Risks of the Dioxins* (ed) Lowrey, W.W. (Montrose, Los Angeles, 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