

Monsanto

To: Loren Wassell

FROM (NAME, LOCATION, PHONE): Terry L. Leet, A2SL 4-8845

JUL 16 1991

DATE: July 11, 1991

cc:

XC; NJP /w
LJO

SUBJECT: NIOSH Dioxin Study/Worker Notification Letter

REFERENCE:

TO: S.R. Archer - A2SP
T.L. Blank - 1740
J.J. Collins - A2SL
G.F. Fort - G4WT
B.R. Friedlander - A3NA
R.G. Kaley - A2NE

W.C. McCarville - A3NA
E.D. McCormick - 1740
G.R. Penny - G5NL
M.A. Pierle - A3NA
H.C. Sherman - 1670
D.F. Snively - E2NP
D.M. Vandiver - A2SP

Attached are copies of our cover letter to NIOSH and their worker notification letter with our revisions for Sauget and Nitro employees who were included in the NIOSH dioxin study. Hopefully, we have contacted a representative from each group within Monsanto who has responsibility for notifying our employees about possible health effects from 2,4,5-T and TCP exposure. We have yet to contact the union officials at Nitro, but plan to do so once they return to work on July 22.

I would also like to take this opportunity to thank you for your comments concerning the NIOSH letter, which were very helpful in preparing a formal response for NIOSH. As a followup, we plan to meet with NIOSH within the next couple of weeks to review our recommendations. If you have any items that you would like us to consider for the meeting, please let me know as soon as possible.

JUL 22 1991

Leet

Loren - what's timing on NIOSH letter to employees?
(2) should we be doing anything on all this?

Sherry... fb

Aug 7/19

DSW 134282

STLCOPCB4034240

Monsanto

Monsanto Company
800 N. Lindbergh Boulevard
St. Louis, Missouri 63167
Phone: (314) 694-1000

July 11, 1991

Winifred L. Boal
National Institute for Occupational Safety and Health
Robert A. Taft Laboratories
4676 Columbia Parkway
Cincinnati, Ohio 45226-1998

Dear Ms. Boal:

We have reviewed your draft notification materials for workers in the NIOSH Dioxin Study. We support your efforts for achieving this goal, and also agree that this is an excellent opportunity to assist our workers with disease prevention and health promotion.

Overall, the draft notification materials are good but we believe that this information in can be condensed. Hence, we offer the following recommendations to your letter:

- Paragraph 1: Indicate that 2,3,7,8-TCDD was the common exposure for the workers in the study.

Mention that NIOSH is contacting all workers in the study because of the institute's worker notification policy.
- Paragraph 3: Clarify the definition for inclusion in the study by stating that the worker was also employed in a department with potential dioxin exposure.
- Paragraph 4: Include the years when TCP and 2,4,5-T were discontinued at the two Monsanto plants.
- Paragraph 5: Merge with paragraph 6 to avoid redundancy.
- Paragraph 7: Merge study results from item #1 with those from paragraph 13 (or item #6) to consolidate all favorable study results.

DSW 134283

STLCOPCB4034241

- Paragraphs 8-14:

Focus on the major study results, i.e., higher mortality rate for all cancers, lung cancer and soft tissue sarcoma, as reported in the *New England Journal of Medicine*. Use qualitative ("slightly higher cancer death rate") instead of quantitative ("1 and a 7th times higher") terminology to avoid confusing statistical concepts. Eliminate lifetime risk estimates which are difficult to comprehend as written.

Include additional information to help clarify increased mortality from lung cancer and soft tissue sarcoma seen for the study population. Focus on known carcinogens (cigarette smoke and asbestos) as potential confounders for lung cancer, and misclassification bias resulting from death certificate-identified soft tissue sarcomas.

Summarize the study results for the plant population after presenting the study results for the industrywide study to highlight the differences for the plant population.

Omit the comments concerning colon cancer since it was not reported in the *New England Journal of Medicine*.

Omit the comments concerning injuries since it was not reported in the *New England Journal of Medicine* and since it was not associated with prior dioxin exposure which is the focus of this letter.

- Paragraph 16:

Include additional information concerning the general risk of developing cancer to give the reader a better perspective on cancer incidence in the general population.

- Paragraphs: 17-18

Merge both paragraphs to avoid redundancy.

Omit the NIOSH factsheet that summarizes the study results since it only duplicates the contents of the letter.

- Paragraph 19:

Omit the last sentence of this paragraph since it implies that workers were asked to participate in the study.

- **Attachments:** Include the American Cancer Society pamphlet that discusses the steps for reducing cancer risk and the NIOSH source of information document. Note that we have modified the latter document to include a contact for the local union, Monsanto medical department, and other occupational medicine clinics who are familiar with the health of our workers.

We have enclosed annotated copies of the Sauget and Nitro letters with our comments/revisions in bold print after each paragraph. We have also enclosed "clean copies" with our revisions only.

We have also discussed our recommendations with the union president of the International Chemical Workers Union, Local No. 12 at our Sauget plant, and hope to do the same soon with the president of the Steelworkers Union at our Nitro plant. The workers at our Nitro plant have just recently settled a strike and will not be returning to their jobs until July 22.

Thank you for the opportunity to review the draft notification materials. We would like to meet with you and your colleagues in Cincinnati sometime after July 12 to discuss our recommendations. One of us will be contacting you within the week to schedule the meeting. If you should have any questions before then, please do not hesitate to call.

Sincerely yours



James J. Collins
Epidemiology Director



Terry L. Leet
Senior Epidemiologist

DRAFT July 11, 1991

Name
Street
City, State, Zip

Dear :

**Paragraph
Number**

- (1) The National Institute for Occupational Safety and Health (NIOSH) is a federal agency that conducts research studies on the health of workers. We conducted a study to look at the health effects of the substance *dioxin*. This letter has information about the study results.

The National Institute for Occupational Safety and Health (NIOSH) is a federal agency that conducts research studies on the health of workers. We conducted a study to look at the health effects of the substance dioxin (2,3,7,8-TCDD). This letter has information about the study results, which we are sending to all workers in the study as part of our worker notification program.

- (2) You were part of the group of workers studied by NIOSH. The study included 5,172 workers potentially exposed to dioxin between 1942 and 1984 at twelve chemical plants around the country. These workers are part of a registry of all U.S. dioxin-exposed workers. The study was based on employment records that the companies gave to us. Therefore, we did not contact individual workers to do the study.

Retain

- (3) You were included in the study because you worked at the Monsanto Company plant in Sauget, Illinois. This was one of the 12 plants in our study. Another Monsanto plant, in Nitro, West Virginia, was also in the study.

You were included in the study because you worked at the Monsanto Company plant at Sauget, Illinois and were employed in a department with potential dioxin exposure. Another Monsanto plant at Nitro, West Virginia was also in the study.

DSW 134286

STLCOPCB4034244

**Paragraph
Number**

- (4) People aren't exposed to dioxin by itself. It was a contaminant (an unwanted component) of other substances made at the Sauget plant. It was present in low levels in *2,4,5-trichlorophenoxyacetic acid (2,4,5-T)*.

Workers weren't exposed to dioxin by itself. At the Sauget plant, dioxin was present in low levels in 2,4,5-trichlorophenoxyacetic acid (2,4,5-T). The production of 2,4,5-T was discontinued at the plant in 1969.

- (5) We think the results for the study as a whole are the most reliable. However, below we also tell you results for the Sauget plant alone. Some of the results for your plant are very different from the overall results.

Omit

- (6) In the study, we compared death rates in workers to death rates in the general U.S. population. The rates in the U.S. population gave us the number of expected deaths.

In the study, we compared death rates in workers to death rates in the general U.S. population. The rates in the U.S. population gave us the number of expected deaths. The results of the overall study and those for your plant are as follows:

- (7) 1. Overall, workers in the study were as healthy as members of the general public. For example, their overall death rate and their rate of heart disease were about the same as the general public's.

Overall Study

- Overall, workers in the study were as healthy as members of the general public. For example, their overall death rate and their rate of heart disease were about the same as the general public's.
- Previous studies have suggested that certain cancers might be related to prior dioxin exposure. These cancers included Hodgkin's disease, non-Hodgkin's lymphoma, stomach cancer, liver cancer and nasal cancer. In our study, worker death rates for these cancers were about the same as those for the general public.

DSW 134287

Paragraph
Number

- (8) 2. Workers exposed to dioxin had a somewhat greater risk of dying from cancer. In 5,172 workers, we *expected* about 230 cases of cancer, but we found 265. This means the workers' risk of cancer was about *1 and a 7th times* normal. Sauget workers, however, appeared to have a *lower cancer risk* than member of the general public.
- (9) The extra cancers in the 5,172 workers occurred mainly in the group of workers exposed to dioxin for more than one year. Their risk was about *1 and a half times* normal. We estimate that about 17% of the workers exposed to dioxin for more than 1 year will die of cancer by age 74. This is about 5% more than expected in the general population.
- Workers exposed to dioxin had a slightly higher total cancer death rate than the general public. Among 5,172 workers, we expected about 230 cancer deaths, but we found 265. The extra cancers occurred mainly in a group of workers exposed to dioxin for more than one year.
- (10) 3. The most common type of cancer was lung cancer. Another type of cancer that stood out was a rare kind called *soft tissue sarcoma (STS)*. Other cancers, such as colon cancer, also appeared to be elevated, but less so.
- Lung cancer was the most common type of cancer seen in the study. Among workers with more than one year of dioxin exposure, we expected 29 deaths from lung cancer but we found 40. Since the study did not fully address worker exposure to known lung cancer-causing agents like cigarette smoke and asbestos, we cannot attribute the increase in lung cancer to dioxin exposure.
 - Another type of cancer that was seen was a rare kind called soft tissue sarcoma. We had expected one death from soft tissue sarcoma for all workers in our study, but reported four deaths. The soft tissue sarcoma deaths were found among workers in two of the twelve plants. Soft tissue sarcomas are sometimes incorrectly reported on death certificates, and this can make the study results difficult to interpret.
- (11) 4. We don't know whether the increase in lung cancer was due to dioxin, other chemicals, smoking, or a combination of these factors. If you smoke, you will be less likely to develop lung cancer if you quit now.

Omit

DSW 134288

Paragraph
Number

- (12) 5. We had expected about 1 death from STS in all the workers in our study. However, we found 4 deaths. None of the deaths from STS were in Sauget employees. This means that all the workers in the study together were about *3 and a third times* more likely to develop STS than people in the general population. However, since STS is so rare, very few workers will develop it.

Omit

- (13) 6. Previous studies had shown that certain other cancers might be related to dioxin. These cancers are: Hodgkin's Disease, non-Hodgkin's lymphoma, and cancer of the stomach, liver, and nose. In our study, they were *not* especially related to dioxin.

Omit

- (14) 7. Workers in our study were about *1 and a quarter times* more likely to die of *injuries* than people in the general public. The injuries may have been related to general safety hazards in the chemical plants. However, Sauget workers had a lower risk of death from injuries than the general public.

Omit

- (15) 8. Some workers exposed to dioxin developed an acne-like skin condition called *chloracne*. A study of death rates is not the right way to look at chloracne, so it was not included in this study.

- Some workers exposed to dioxin developed a non-life threatening, acne-like skin condition called chloracne. This condition was not included in the study since we were only looking at death rates.

Your Plant (Sauget)

- Unlike workers in the overall study, Sauget workers had cancer rates no different than those of the general public. We expected four cancer deaths for this group, but we found three deaths.
- None of the deaths were due to soft tissue sarcoma.

DSW 134289

**Paragraph
Number**

- (16) This study described disease risks for the group of workers exposed to dioxin. The study can not tell us the risks for individuals. The results of the study do not mean that you will develop cancer.

It is important that you understand that this study evaluated disease rates for the group of workers exposed to dioxin. The study cannot tell us the risks for individuals. The results of the study do not mean that you will develop cancer, even though about one out of three Americans will develop cancer during their lifetime.

- (17) The enclosed NIOSH factsheets have more information about the study and list sources of further information. There are no specific medical tests for most of the excess cancers seen. However, you may wish to ask you doctor's advice on tests for colon cancer. Consider sending a copy of the letter to your doctor for your medical file.

Omit

- (18) The enclosed pamphlet from the American Cancer Society tells you steps you can take to reduce your cancer risk.

The enclosed pamphlet from the American Cancer Society suggests steps you can take to reduce your cancer risk. Another enclosure provides additional sources of information that can help answer any questions that you may have. You may also want to consider sending a copy of this letter to your doctor to update your medical file.

- (19) If you, your doctor, or members of your family have any questions, please call Winifred L. Boal at the NIOSH toll-free number: 1-800-356-4674. Say you're calling about the dioxin study. Thank you for being a part of this study.

If you, your doctor, or members of your family have any questions, please call Winifred L. Boal at the NIOSH toll-free number: 1-800-356-4674. Say you're calling about the dioxin study.

Sincerely yours,

Lawrence J. Fine, M.D., Dr. P.H.
Director
Division of Surveillance, Hazard
Evaluations and Field Studies

Winifred L. Boal, M.P.H.
Epidemiologist
Industrywide Studies Branch
Division of Surveillance, Hazard
Evaluations and Field Studies

Retain

Enclosures:
2 NIOSH Factsheets
American Cancer Society Pamphlet

Enclosures:
American Cancer Society Pamphlet
Sources of Information

DSW 134291

Sources of Information

July 11, 1991

If you or a family member would like to ask questions about any information in this packet, call Winifred L. Boal at the NIOSH toll-free number: 1-800-356-4674. Say you're calling about the dioxin study.

Local Sources of Information

* **Edward D. McCormick**
President, ICWU Local No. 12
500 Monsanto Avenue
Sauget, Illinois 62206-1198
(618) 482-6348

* **John H. Baker, M.D.**
Director, Occupational Medicine
Monsanto Company
800 North Lindbergh Boulevard
St. Louis, Missouri 63167
(314) 694-8806 -- call collect

Other Sources of Information

The Occupational Safety and Health Administration (OSHA) is the federal agency that regulates safety and health in the workplace. They can answer questions about occupational safety and health.

Occupational Safety and Health
Administration (OSHA)
218A West Main Street
Belleville, Illinois 62220
(618) 277-5300

The following medical clinics have doctors who specialize in diseases caused at work (occupational medicine).

Daniel O. Hryhorczuk, M.D.
(pronounced Rŭ•hor•chĕk)
Occupational Medicine Clinic
Cook County Hospital
720 South Wolcott
Chicago, Illinois 60612
(312) 633-5310

Karen Webb, M.D.
Healthline Corporate Health Services
3663 Lindell Boulevard, Suite 180
St. Louis, Missouri 63108
(314) 567-5770

The American Cancer Society can answer questions about cancer. They also provide classes to stop smoking.

American Cancer Society
118 S. Seminary Street
Collinsville, Illinois 62234
(618) 345-7911

The National Cancer Institute is a federal agency that does research on cancer. They can provide free factsheets on many types of cancer.

National Cancer Institutes's toll-free
telephone number: 1-800-4-CANCER

DRAFT July 11, 1991

Name
Street
City, State, Zip

Dear :

**Paragraph
Number**

- (1) The National Institute for Occupational Safety and Health (NIOSH) is a federal agency that conducts research studies on the health of workers. We conducted a study to look at the health effects of the substance *dioxin*. This letter has information about the study results.

The National Institute for Occupational Safety and Health (NIOSH) is a federal agency that conducts research studies on the health of workers. We conducted a study to look at the health effects of the substance dioxin (2,3,7,8-TCDD). This letter has information about the study results, which we are sending to all workers in the study as part of our worker notification program.

- (2) You were part of the group of workers studied by NIOSH. The study included 5,172 workers potentially exposed to dioxin between 1942 and 1984 at 12 chemical plants around the country. These workers are part of a registry of all U.S. dioxin-exposed workers. The study was based on employment records that the companies gave to us. Therefore, we did not contact individual workers to do the study.

Retain

- (3) You were included in the study because you worked at a Monsanto Company plant in Nitro, West Virginia. This was one of the 12 plants in our study. Another Monsanto plant in Sauget, Illinois was also in the study.

You were included in the study because you worked at the Monsanto Company plant at Nitro, West Virginia and were employed in a department with potential dioxin exposure. Another Monsanto plant at Sauget, Illinois was also in the study.

DSW 134293

**Paragraph
Number**

- (4) People aren't exposed to dioxin by itself. It was a contaminant (an unwanted component) of other substances made at the Nitro plant. It was present in low - levels in *2,4,5-trichlorophenoxyacetic acid (2,4,5-T)* and *trichlorophenol (TCP)*.

Workers weren't exposed to dioxin by itself. At the Nitro plant, dioxin was present in low levels in 2,4,5-trichlorophenoxyacetic acid (2,4,5-T) and trichlorophenol (TCP). The production of 2,4,5-T and TCP was discontinued at the plant in 1969.

- (5) We think the results for the study as a whole are the most reliable. However, below we also tell you results for the Sauget plant alone. Some of the results for your plant are very different from the overall results.

Omit

- (6) In the study, we compared death rates in workers to death rates in the general U.S. population. The rates in the U.S. population gave us the number of expected deaths.

In the study, we compared death rates in workers to death rates in the general U.S. population. The rates in the U.S. population gave us the number of expected deaths. The results of the overall study and those for your plant are as follows:

- (7) 1. Overall, workers in the study were as healthy as members of the general public. For example, their overall death rate and their rate of heart disease were about the same as the general public's.

Overall Study

- Overall, workers in the study were as healthy as members of the general public. For example, their overall death rate and their rate of heart disease were about the same as the general public's.
- Previous studies have suggested that certain cancers might be related to prior dioxin exposure. These cancers included Hodgkin's disease, non-Hodgkin's lymphoma, stomach cancer, liver cancer and nasal cancer. In our study, worker death rates for these cancers were about the same as those for the general public.

DSW 134294

Paragraph
Number

- (8) 2. Workers exposed to dioxin had a somewhat greater risk of dying from cancer. In 5,172 workers, we *expected* about 230 cases of cancer, but we found 265. This means the workers' risk of cancer was about *1 and a 7th times* normal. Sauter workers, however, appeared to have a *lower cancer risk* than member of the general public.

Omit

- (9) The extra cancers in the 5,172 workers occurred mainly in the group of workers exposed to dioxin for more than one year. Their risk was about *1 and a half times* normal. We estimate that about 17% of the workers exposed to dioxin for more than 1 year will die of cancer by age 74. This is about 5% more than expected in the general population.

- Workers exposed to dioxin had a slightly higher total cancer death rate than the general public. Among 5,172 workers, we expected about 230 cancer deaths, but we found 265. The extra cancers occurred mainly in a group of workers exposed to dioxin for more than one year.

- (10) 3. The most common type of cancer was lung cancer. Another type of cancer that stood out was a rare kind called *soft tissue sarcoma (STS)*. Other cancers, such as colon cancer, also appeared to be elevated, but less so.

- Lung cancer was the most common type of cancer seen in the study. Among workers with more than one year of dioxin exposure, we expected 29 deaths from lung cancer but we found 40. Since the study did not fully address worker exposure to known lung cancer-causing agents like cigarette smoke and asbestos, we cannot attribute the increase in lung cancer to dioxin exposure.
- Another type of cancer that was seen was a rare kind called soft tissue sarcoma. We had expected one death from soft tissue sarcoma for all workers in our study, but reported four deaths. The soft tissue sarcoma deaths were found among workers in two of the twelve plants. Soft tissue sarcomas are sometimes incorrectly reported on death certificates, and this can make the study results difficult to interpret.

DSW 134295

**Paragraph
Number**

- (11) 4. We don't know whether the increase in lung cancer was due to dioxin, other chemicals, smoking, or a combination of these factors. If you smoke, you will be less likely to develop lung cancer if you quit now.

Omit

- (12) 5. We had expected about 1 death from STS in all the workers in our study. However, we found 4 deaths. None of the deaths from STS were in Sauget employees. This means that all the workers in the study together were about *3 and a third times* more likely to develop STS than people in the general population. However, since STS is so rare, very few workers will develop it.

Omit

- (13) 6. Previous studies had shown that certain other cancers might be related to dioxin. These cancers are: Hodgkin's Disease, non-Hodgkin's lymphoma, and cancer of the stomach, liver, and nose. In our study, they were *not* especially related to dioxin.

Omit

- (14) 7. Workers in our study were about *1 and a quarter times* more likely to die of *injuries* than people in the general public. The injuries may have been related to general safety hazards in the chemical plants. However, Sauget workers had a lower risk of death from injuries than the general public.

Omit

- (15) 8. Some people exposed to dioxin developed an acne-like skin condition called *chloracne*. A study of death rates is not the right way to look chloracne, so it was not included in this study.

- Some workers exposed to dioxin developed a non-life threatening, acne-like skin condition called chloracne. This condition was not included in the study since we were only looking at death rates.

Your Plant (Nitro)

- As a group, Nitro workers had an overall cancer death rate similar to that for the general public. The same was true for lung cancer.

**Paragraph
Number**

- Nitro workers had two of the four deaths reported as soft tissue sarcoma in the study. Monsanto reported these two cases to Nitro employees and NIOSH in 1981.
- Nitro workers also had a high bladder cancer death rate, which was not seen at the other plants in the study. However, p-aminobiphenyl (PAB) - a known bladder cancer-causing agent - was used at the Nitro plant between 1935 and 1955, and may well have been the reason for the increase in bladder cancer among Nitro workers. Workers exposed to PAB have been participating in a Monsanto-sponsored bladder cancer screening program since 1955.

- (16) This study described disease risks for the group of workers exposed to dioxin. The study can not tell us the risks for individuals. The results of the study do not mean that you will develop cancer.

It is important that you understand that this study evaluated disease rates for the group of workers exposed to dioxin. The study cannot tell us the risks for individuals. The results of the study do not mean that you will develop cancer, even though about one out of three Americans will develop cancer during their lifetime.

- (17) The enclosed NIOSH factsheets have more information about the study and list sources of further information. There are no specific medical tests for most of the excess cancers seen. However, you may wish to ask you doctor's advice on tests for colon cancer. Consider sending a copy of the letter to your doctor for your medical file.

Omit

- (18) The enclosed pamphlet from the American Cancer Society tells you steps you can take to reduce your cancer risk.

The enclosed pamphlet from the American Cancer Society suggests steps you can take to reduce your cancer risk. Another enclosure provides additional sources of information that can help answer any questions that you may have. You may also want to consider sending a copy of this letter to your doctor to update your medical file.

**Paragraph
Number**

- (19) If you, your doctor, or members of your family have any questions, please call Winifred L. Boal at the NIOSH toll-free number: 1-800-356-4674. Say you're calling about the dioxin study. Thank you for being a part of this study.

If you, your doctor, or members of your family have any questions, please call Winifred L. Boal at the NIOSH toll-free number: 1-800-356-4674. Say you're calling about the dioxin study.

Sincerely yours,

Lawrence J. Fine, M.D., Dr. P.H.
Director
Division of Surveillance, Hazard
Evaluations and Field Studies

Winifred L. Boal, M.P.H.
Epidemiologist
Industrywide Studies Branch
Division of Surveillance, Hazard
Evaluations and Field Studies

Retain

Enclosures:
2 NIOSH Factsheets
American Cancer Society Pamphlet

Enclosures:
American Cancer Society Pamphlet
Sources of Information

DSW 134298

Sources of Information

July 11, 1991

If you or a family member would like to ask questions about any information in this packet, call Winifred L. Boal at the NIOSH toll-free number: 1-800-356-4674. Say you're calling about the dioxin study.

Local Sources of Information

* (Add Steelworkers union president or safety and health representative)

* **John H. Baker, M.D.**
Director, Occupational Medicine
Monsanto Company
800 North Lindbergh Boulevard
St. Louis, Missouri 63167
(314) 694-8806 -- call collect

Other Sources of Information

The Occupational Safety and Health Administration (OSHA) is the federal agency that regulates safety and health in the workplace. They can answer questions about occupational safety and health.

Occupational Safety and Health
Administration (OSHA)
550 Egan Street, Room 206
Charleston, West Virginia 25301
(304) 347-5937

The following medical clinics have doctors who specialize in diseases caused at work (occupational medicine).

Mario Battigelli, M.D.
Professor, Occupational Medicine
West Virginia University
School of Medicine
2264 Health Sciences Center South
Morgantown, West Virginia 26506
(304) 293-3693

The American Cancer Society can answer questions about cancer. They also provide classes to stop smoking.

Jann Fisher
American Cancer Society
210 Walnut Street
Ravenswood, West Virginia 26164
(304) 273-2702

The National Cancer Institute is a federal agency that does research on cancer. They can provide free factsheets on many types of cancer.

National Cancer Institute's toll-free telephone number: 1-800-4-CANCER

DRAFT July 11, 1991

Name
Street
City, State, Zip

Dear :

The National Institute for Occupational Safety and Health (NIOSH) is a federal agency that conducts research studies on the health of workers. We conducted a study to look at the health effects of the substance dioxin (2,3,7,8-TCDD). This letter has information about the study results, which we are sending to all workers in the study as part of our worker notification program.

You were part of the group of workers studied by NIOSH. The study included 5,172 workers potentially exposed to dioxin between 1942 and 1984 at twelve chemical plants around the country. These workers are part of a registry of all U.S. dioxin-exposed workers. The study was based on employment records that the companies gave to us. Therefore, we did not contact individual workers to do the study.

You were included in the study because you worked at the Monsanto Company plant at Sauget, Illinois and were employed in a department with potential dioxin exposure. Another Monsanto plant at Nitro, West Virginia was also in the study.

Workers weren't exposed to dioxin by itself. At the Sauget plant, dioxin was present in low levels in 2,4,5-trichlorophenoxyacetic acid (2,4,5-T). The production of 2,4,5-T was discontinued at the plant in 1969.

In the study, we compared death rates in workers to death rates in the general U.S. population. The rates in the U.S. population gave us the number of expected deaths. The results of the overall study and those for your plant are as follows:

Overall Study

- Overall, workers in the study were as healthy as members of the general public. For example, their overall death rate and their rate of heart disease were about the same as the general public's.
- Previous studies have suggested that certain cancers might be related to prior dioxin exposure. These cancers included Hodgkin's disease, non-Hodgkin's lymphoma, stomach cancer, liver cancer and nasal cancer. In our study, worker death rates for these cancers were about the same as those for the general public.
- Workers exposed to dioxin had a slightly higher total cancer death rate than the general public. Among 5,172 workers, we expected about 230 cancer deaths, but we found 265. The extra cancers occurred mainly in a group of workers exposed to dioxin for more than one year.

DSW 134300

STLCOPCB4034258

- Lung cancer was the most common type of cancer seen in the study. Among workers with more than one year of dioxin exposure, we expected 29 deaths from lung cancer but we found 40. Since the study did not fully address worker exposure to known lung cancer-causing agents like cigarette smoke and asbestos, we cannot attribute the increase in lung cancer to dioxin exposure.
- Another type of cancer that was seen was a rare kind called soft tissue sarcoma. We had expected one death from soft tissue sarcoma for all workers in our study, but reported four deaths. The soft tissue sarcoma deaths were found among workers in two of the twelve plants. Soft tissue sarcomas are sometimes incorrectly reported on death certificates, and this can make the study results difficult to interpret.
- Some workers exposed to dioxin developed a non-life threatening, acne-like skin condition called chloracne. This condition was not included in the study since we were only looking at death rates.

Your Plant (Sauget)

- Unlike workers in the overall study, Sauget workers had cancer rates no different than those of the general public. We expected four cancer deaths for this group, but we found three deaths.
- None of the deaths were due to soft tissue sarcoma.

It is important that you understand that this study evaluated disease rates for the group of workers exposed to dioxin. The study cannot tell us the risks for individuals. The results of the study do not mean that you will develop cancer, even though about one out of three Americans will develop cancer during their lifetime.

The enclosed pamphlet from the American Cancer Society suggests steps you can take to reduce your cancer risk. Another enclosure provides additional sources of information that can help answer any questions that you may have. You may also want to consider sending a copy of this letter to your doctor to update your medical file.

DSW 134301

NIOSH Sauguet letter - Draft 07/11/91
page 3

If you, your doctor, or members of your family have any questions, please call Winifred L. Boal at the NIOSH toll-free number: 1-800-356-4674. Say you're calling about the dioxin study.

Sincerely yours,

Lawrence J Fine, M.D., Dr. P.H.
Director
Division of Surveillance, Hazard
Evaluations and Field Studies

Winifred L. Boal, M.P.H.
Epidemiologist
Industrywide Studies Branch
Division of Surveillance, Hazard
Evaluations and Field Studies

Enclosures:
American Cancer Society Pamphlet
Sources of Information

DSW 134302

STLCOPCB4034260

Sources of Information

July 11, 1991

If you or a family member would like to ask questions about any information in this packet, call Winifred L. Boal at the NIOSH toll-free number: 1-800-356-4674. Say you're calling about the dioxin study.

Local Sources of Information

* Edward D. McCormick
President, ICWU Local No. 12
500 Monsanto Avenue
Sauget, Illinois 62206-1198
(618) 482-6348

* John H. Baker, M.D.
Director, Occupational Medicine
Monsanto Company
800 North Lindbergh Boulevard
St. Louis, Missouri 63167
(314) 694-8806 -- call collect

Other Sources of Information

The Occupational Safety and Health Administration (OSHA) is the federal agency that regulates safety and health in the workplace. They can answer questions about occupational safety and health.

Occupational Safety and Health
Administration (OSHA)
218A West Main Street
Belleville, Illinois 62220
(618) 277-5300

The following medical clinics have doctors who specialize in diseases caused at work (occupational medicine).

Daniel O. Hryhorczuk, M.D.
(pronounced Rŭ•hor•chĕk)
Occupational Medicine Clinic
Cook County Hospital
720 South Wolcott
Chicago, Illinois 60612
(312) 633-5310

Karen Webb, M.D.
Healthline Corporate Health Services
3663 Lindell Boulevard, Suite 180
St. Louis, Missouri 63108
(314) 531-5976

The American Cancer Society can answer questions about cancer. They also provide classes to stop smoking.

American Cancer Society
118 S. Seminary Street
Collinsville, Illinois 62234
(618) 345-7911

The National Cancer Institute is a federal agency that does research on cancer. They can provide free factsheets on many types of cancer.

National Cancer Institutes's toll-free
telephone number: 1-800-4-CANCER

Today, scientists think most cancer may be related to lifestyle and environment—what you eat, drink, if you smoke and where you work and play. The good news is you can help reduce your own cancer risk by *taking control* of things in your daily life.

We have 5 protective factors you to add to your life and risk factors to subtract.



DSW 134304

POINTS TO REMEMBER

Not all cancer risk factors are equal. The most important risk is tobacco. And some risk factors, when combined, greatly increase risk—smoking *and* heavy drinking, for instance. However, you can't control all risk factors like family health history or your heredity.

WHAT CAN YOU DO?

Taking Control of your lifestyle is key to helping you feel better and reducing your cancer risk.



TAKING CONTROL

10 STEPS TO A HEALTHIER LIFE AND REDUCED CANCER RISK



1 Eat more cabbage-family vegetables. Important studies show these vegetables (also known as cruciferous) appear to protect you against colorectal, stomach and respiratory cancers. They include broccoli, cauliflower, brussels sprouts, all cabbages and kale.

2 Add more high-fiber foods. A high-fiber diet may protect you against colon cancer. Fiber occurs in whole grains, fruits and vegetables including peaches, strawberries, potatoes, spinach, tomatoes, wheat and bran cereals, rice, popcorn, whole-wheat bread.

3 Choose foods with Vitamin A. It may help protect you against cancers of the esophagus, larynx and lung. Fresh foods with beta-carotene like carrots, peaches, apricots, squash and broccoli are the best source, not vitamin pills.

4 Do the same for Vitamin C. This vitamin may help protect you against cancers of the esophagus and stomach. You'll find it naturally in lots of fresh fruits and vegetables like grapefruit, cantaloupe, oranges, strawberries, red and green peppers, broccoli, tomatoes.

5 Add weight control. Obesity is linked to cancers of the uterus, gallbladder, breast and colon. Exercise and lower calorie intake help you avoid gaining a lot of weight. Walking is ideal exercise for most people, and primes you for other sports. Check with your physician before strenuous activity, or a special diet.

6 Trim fat from your diet. A high-fat diet increases your risk of breast, colon and prostate cancer. Fat loaded calories mean a weight gain for you, especially if you don't exercise. Cut overall fat intake by eating lean meat, fish, skinned poultry, low-fat dairy products. Avoid pastry, candies.

7 Subtract salt-cured, smoked, nitrite-cured foods. Cancers of the esophagus and stomach are common in countries where these foods are eaten in large quantities. Choose bacon, ham, hot dogs or salt-cured fish only occasionally, if you like them a lot.

8 Stop cigarette smoking. Smoking is the biggest cancer risk factor of all the main cause of lung cancer and 30% of all cancers. Smoking at home means more respiratory and allergic ailments for kids. Pregnant women who smoke harm their babies. Chewing tobaccos are harmful, too, as risks for mouth and throat cancers. Pick a quit day now and call us for help.

9 Go easy on alcohol. If you drink a lot, your risk of liver cancer increases. Smoking and drinking alcohol greatly increases risk of cancers of the mouth, throat, larynx and esophagus. If you do drink alcohol, be moderate in your intake.

10 Respect the sun's rays. Too much sun causes skin cancer and other damage to your skin. Protect yourself with sunscreen -- at least #15, wear long sleeves and a hat, especially during midday hours -- 11 a.m. to 3 p.m. Don't use indoor sunlamps, tanning parlors or pills. If you see changes in a mole or a sore that does not heal, see your physician.

Excessive X rays, estrogens and work-related exposures to harmful chemicals and fibers like asbestos are potential risks. Always check with your physician about the need for X rays and estrogens. Wear proper clothing on the job and learn emergency procedures.



DRAFT July 11, 1991

Name
Street
City, State, Zip

Dear :

The National Institute for Occupational Safety and Health (NIOSH) is a federal agency that conducts research studies on the health of workers. We conducted a study to look at the health effects of the substance dioxin (2,3,7,8-TCDD). This letter has information about the study results, which we are sending to all workers in the study as part of our worker notification program.

You were part of the group of workers studied by NIOSH. The study included 5,172 workers potentially exposed to dioxin between 1942 and 1984 at twelve chemical plants around the country. These workers are part of a registry of all U.S. dioxin-exposed workers. The study was based on employment records that the companies gave to us. Therefore, we did not contact individual workers to do the study.

You were included in the study because you worked at the Monsanto Company plant at Nitro, West Virginia and were employed in a department with potential dioxin exposure. Another Monsanto plant at Sauget, Illinois was also in the study.

Workers weren't exposed to dioxin by itself. At the Nitro plant, dioxin was present in low levels in 2,4,5-trichlorophenoxyacetic acid (2,4,5-T) and trichlorophenol (TCP). The production of 2,4,5-T and TCP was discontinued at the plant in 1969.

In the study, we compared death rates in workers to death rates in the general U.S. population. The rates in the U.S. population gave us the number of expected deaths. The results of the overall study and those for your plant are as follows:

Overall Study

- Overall, workers in the study were as healthy as members of the general public. For example, their overall death rate and their rate of heart disease were about the same as the general public's.
- Previous studies have suggested that certain cancers might be related to prior dioxin exposure. These cancers included Hodgkin's disease, non-Hodgkin's lymphoma, stomach cancer, liver cancer and nasal cancer. In our study, worker death rates for these cancers were about the same as those for the general public.
- Workers exposed to dioxin had a slightly higher total cancer death rate than the general public. Among 5,172 workers, we expected about 230 cancer deaths, but we found 265. The extra cancers occurred mainly in a group of workers exposed to dioxin for more than one year.

DSW 134306

STLCOPCB4034264

- Lung cancer was the most common type of cancer seen in the study. Among workers with more than one year of dioxin exposure, we expected 29 deaths from lung cancer but we found 40. Since the study did not fully address worker exposure to known lung cancer-causing agents like cigarette smoke and asbestos, we cannot attribute the increase in lung cancer to dioxin exposure.
- Another type of cancer that was seen was a rare kind called soft tissue sarcoma. We had expected one death from soft tissue sarcoma for all workers in our study, but reported four deaths. The soft tissue sarcoma deaths were found among workers in two of the twelve plants. Soft tissue sarcomas are sometimes incorrectly reported on death certificates, and this can make the study results difficult to interpret.
- Some workers exposed to dioxin developed a non-life threatening, acne-like skin condition called chloracne. This condition was not included in the study since we were only looking at death rates.

Your Plant (Nitro)

- As a group, Nitro workers had an overall cancer death rate similar to that for the general public. The same was true for lung cancer.
- Nitro workers had two of the four deaths reported as soft tissue sarcoma in the study. Monsanto reported these two cases to Nitro employees and NIOSH in 1981.
- Nitro workers also had a high bladder cancer death rate, which was not seen at the other plants in the study. However, p-aminobiphenyl (PAB) - a known bladder cancer-causing agent - was used at the Nitro plant between 1935 and 1955, and may well have been the reason for the increase in bladder cancer among Nitro workers. Workers exposed to PAB have been participating in a Monsanto-sponsored bladder cancer screening program since 1955.

It is important that you understand that this study evaluated disease rates for the group of workers exposed to dioxin. The study cannot tell us the risks for individuals. The results of the study do not mean that you will develop cancer, even though about one out of three Americans will develop cancer during their lifetime.

The enclosed pamphlet from the American Cancer Society suggests steps you can take to reduce your cancer risk. Another enclosure provides additional sources of information that can help answer any questions that you may have. You may also want to consider sending a copy of this letter to your doctor to update your medical file.

NIOSH Nitro letter - Draft 07/11/91
page 3

If you, your doctor, or members of your family have any questions, please call Winifred L. Boal at the NIOSH toll-free number: 1-800-356-4674. Say you're calling about the dioxin study.

Sincerely yours,

Lawrence J Fine, M.D., Dr. P.H.
Director
Division of Surveillance, Hazard
Evaluations and Field Studies

Winifred L. Boal, M.P.H.
Epidemiologist
Industrywide Studies Branch
Division of Surveillance, Hazard
Evaluations and Field Studies

Enclosures:
American Cancer Society Pamphlet
Sources of Information

DSW 134308

STLCOPCB4034266

Sources of Information

July 9, 1991

If you or a family member would like to ask questions about any information in this packet, call Winifred L. Boal at the NIOSH toll-free number: 1-800-356-4674. Say you're calling about the dioxin study.

Local Sources of Information

* (Add Steelworkers union president or safety and health representative)

* John H. Baker, M.D.
Director, Occupational Medicine
Monsanto Company
800 North Lindbergh Boulevard
St. Louis, Missouri 63167
(314) 694-8806 -- call collect

Other Sources of Information

The Occupational Safety and Health Administration (OSHA) is the federal agency that regulates safety and health in the workplace. They can answer questions about occupational safety and health.

Occupational Safety and Health
Administration (OSHA)
550 Eagan Street, Room 206
Charleston, West Virginia 25301
(304) 347-5937

The following medical clinics have doctors who specialize in diseases caused at work (occupational medicine).

Mario Battigelli, M.D.
Professor, Occupational Medicine
West Virginia University
School of Medicine
2264 Health Sciences Center South
Morgantown, West Virginia 26506
(304) 293-3693

The American Cancer Society can answer questions about cancer. They also provide classes to stop smoking.

Jann Fisher
American Cancer Society
210 Walnut Street
Ravenswood, West Virginia 26164
(304) 273-2702

The National Cancer Institute is a federal agency that does research on cancer. They can provide free factsheets on many types of cancer.

National Cancer Institute's toll-free telephone number: 1-800-4-CANCER

Today, scientists think most cancer may be related to lifestyle and environment — what you eat, drink, if you smoke and where you work and play. So the good news is you can help reduce your own cancer risk by *taking control* of things in your daily life.

We have 5 protective factors for you to add to your life and 5 risk factors to subtract.



POINTS TO REMEMBER

Not all cancer risk factors are equal. The most important risk is tobacco. And some risk factors, when combined, greatly increase risk — smoking *and* heavy drinking, for instance. However, you can't control all risk factors like family health history or your heredity.

WHAT CAN YOU DO?

Taking Control of your lifestyle is key to helping you feel better and reducing your cancer risk.

AMERICAN
CANCER
SOCIETY

OTET MSQ

AMERICAN
CANCER
SOCIETY

TAKING CONTROL

10 STEPS TO A HEALTHIER
AND REDUCED CANCER



1 Eat more cabbage-family vegetables. Important studies show these vegetables (also known as cruciferous) appear to protect you against colorectal, stomach and respiratory cancers. They include broccoli, cauliflower, brussels sprouts, all cabbages and kale.

2 Add more high-fiber foods. A high-fiber diet may protect you against colon cancer. Fiber occurs in whole grains, fruits and vegetables including peaches, strawberries, potatoes, spinach, tomatoes, wheat and bran cereals, rice, popcorn, whole-wheat bread.

3 Choose foods with Vitamin A. It may help protect you against cancers of the esophagus, larynx and lung. Fresh foods with beta-carotene like carrots, peaches, apricots, squash and broccoli are the best source, not vitamin pills.

4 Do the same for Vitamin C. This vitamin may help protect you against cancers of the esophagus and stomach. You'll find it naturally in lots of fresh fruits and vegetables like grapefruit, cantaloupe, oranges, strawberries, red and green peppers, broccoli, tomatoes.

5 Add weight control. Obesity is linked to cancers of the uterus, gallbladder, breast and colon. Exercise and lower calorie intake help you avoid gaining a lot of weight. Walking is ideal exercise for most people, and primes you for other sports. Check with your physician before strenuous activity, or a special diet.

6 Trim fat from your diet. A high-fat diet increases your risk of breast, colon and prostate cancer. Fat-loaded calories mean a weight gain for you, especially if you don't exercise. Cut overall fat intake by eating lean meat, fish, skinned poultry, low-fat dairy products. Avoid pastry, candies.

7 Subtract salt-cured, smoked, nitrite-cured foods. Cancers of the esophagus and stomach are common in countries where these foods are eaten in large quantities. Choose bacon, ham, hot dogs or salt-cured fish only occasionally, if you like them a lot.

8 Stop cigarette smoking. Smoking is the biggest cancer risk factor of all the main cause of lung cancer and 30% of all cancers. Smoking at home means more respiratory and allergic ailments for kids. Pregnant women who smoke harm their babies. Chewing tobaccos are harmful, too, as risks for mouth and throat cancers. Pick a quit day now and call us for help.

9 Go easy on alcohol. If you drink a lot, your risk of liver cancer increases. Smoking and drinking alcohol greatly increases risk of cancers of the mouth, throat, larynx and esophagus. If you do drink alcohol, be moderate in your intake.

10 Respect the sun's rays. Too much sun causes skin cancer and other damage to your skin. Protect yourself with sunscreen - at least #15, wear long sleeves and a hat, especially during midday hours - 11 a.m. to 3 p.m. Don't use indoor sunlamps, tanning parlors or pills. If you see changes in a mole or a sore that does not heal, see your physician.

Excessive X rays, estrogens and work-related exposures to harmful chemicals and fibers like asbestos are potential risks. Always check with your physician about the need for X rays and estrogens. Wear proper clothing on the job and learn emergency procedures.



DSW 134311