

Interoffice
Communication

To: Tom Grumbles



From: D. Penney

Date: November 15, 1993

Subject: LCVCM and Aberdeen Q & A

VISTA

Here are the draft Q & As for Aberdeen and LCVCM. I've also included my comments on the draft answers that you prepared and sent over.

Let's discuss after you have had a chance to review.

LCVCM Q & A

5. Is the VCM skin disease, acroosteolysis, reversible?

I can't find any thing on this. Perhaps Dr. Ham can help here.

6. What's the difference between "known human" and "probable human" carcinogens?

A "known human" carcinogen is one for which there is strong evidence from human studies that exposure to the material can cause cancer. A "probable human" carcinogen is one for which there is some, but not conclusive, evidence that the material can cause cancer in humans.

7. Can you get VCM exposure through the skin? What about at concentrations where breathing air is required?

Absorption through the skin of very small amounts of VCM from the air is possible. Experiments with animals have estimated that only 0.023% of the VCM available in the air is absorbed through the skin at a concentration of 7,000 ppm. Humans wearing protective clothing would probably absorb an even smaller amount.

8. What does short-term exposure mean in the VCM "exposure history" slide?

The term "Short-term exposure" was used to contrast exposures which last anywhere from a minute or even as long as a few months with those lasting for years.

11. Who decides what causes certain kinds of cancers? How is this determination made?

This decision can be made by an individual, but usually groups of individuals with specialized knowledge (e.g. medicine, toxicology, epidemiology) are better at surveying the the different types of relevant scientific information available to make such a determination. These evaluations most often include information from human and animal studies as well as other organisms, including bacteria.

12. Who is Sir Richard Doll and what makes him an expert?

Sir Richard Doll was trained as a mathematician. He has achieved wide recognition in the scientific community for his contributions to the mathematical interpretation of human cancer studies. He holds an academic position at the University of Oxford in England and serves on numerous health effects advisory boards. He is widely published in peer-reviewed journals.

LCVCM Q & A

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14. Can't equal "experts" come up with different opinions when looking at the same data?

Certainly, when it comes to making judgements on incomplete data about complex issues such as when a chemical causes cancer in humans, experts can disagree. Sometimes these issues cannot be resolved until additional scientific information is available.

15. Why isn't the almost two-fold increase in brain cancer in the Wong study considered significant?

From the standpoint of the overall brain cancer rate in the U.S., this increase would be very small, approximately 0.004% greater than the already expected rate of about 0.005%. Of course, any increase is worthy of consideration and should be studied to confirm whether it is real and to understand the circumstances it may be related to.

17. What is the significance of EDC binding to DNA? Does VCM also bind to DNA?

For certain chemicals such as EDC it is thought that the process leading to the production of cancer is an initial binding to DNA. DNA is made of the genes which control the way a cell functions. By binding to DNA a chemical can cause changes in the genes which can alter the way cells grow, eventually leading to cancer. VCM is thought to work through a similar process and is known to bind to DNA as well.

Aberdeen Q & A

- 1. What are the results of the last update to the angiosarcoma registry which was published in 1991? Are any Vista people in the registry? When will the next registry update be available?**

The angiosarcoma registry is a world-wide registry of all cases of angiosarcoma of the liver which have been attributed to vinyl chloride exposure. As of the last review, 161 cases had been entered into the registry. 39 of these cases were from the U.S., but none of these cases were from Vista. Vista has not had any cases of angiosarcoma of the liver diagnosed in its workers at any site.

A more recent update of the registry has just been completed. Hopefully, we will have a copy of it available to us within the next few months.

- 2. Are there studies that show chemical workers have a higher risk of Cancer?**

Some studies show that chemical workers that have been exposed to certain chemicals or chemical processes have a higher risk of some forms of cancer. Usually, the higher risks have been linked to chemical exposures which were higher than those encountered today.

- 3. Do we have data from each plant on the risk of cancer?**

Vista maintains medical records on its employees. However, the Company does not they have not been studied to determine whether any particular plant is at an increased risk of cancer.

- 4. How is the information on cause of death collected?**

The cause of death is obtained from the death certificate. A copy of the death certificate can be obtained from the local health authorities where the death occurred. Often, the most difficult part of the process is in finding the place of death of former employees, particularly if the employee only worked with the company for a short period of time. Sometimes this information can be obtained from company records, other employees or the National Death Registry, which is a registry of the location of all deaths in the U.S.

- 5. Why are studies typically conducted on deceased individuals? Why not conduct surveys of plant people and see what problems people have?**

Most often the focus is on the causes of death because this information is easier to obtain and it provides data about the most serious diseases. Obviously, other diseases, though not life threatening, can have a major impact as well. Surveys can provide this information although the accuracy of the data can be a problem. Often, people do not know the specific disease that they or other individuals may have experienced.

6. Do the studies in the presentation that was given by D. Penney take into account exposure to other chemicals besides vinyl chloride?

Most studies of workers engaged in VCM or PVC manufacturing or processing have not taken potential exposure to other chemicals into account. This is a area worthy of further investigation.

7. What are the health effects of trichloroethylene (TCE)?

TCE can produce skin irritation probably due to its ability to dry the skin. Nervous system damage has been attributed to overexposure to TCE. Large doses of TCE produce liver and kidney disorders in animals, but these effects would not be anticipated in the accepted range of occupational TCE exposures. Individuals have died from the accumulation of fluid in the lungs produced by intentionally sniffing high concentrations of TCE.

TCE is considered a potential human carcinogen because it has caused the production of tumors in mice.

8. How are animal studies used to determine whether a chemical can cause cancer?

Animal studies are one of many sources of information used to help determine whether a chemical causes cancer. A chemical that has been shown to cause cancer in animals may, without data to the contrary, be presumed capable of causing cancer in humans.

10. Why does it take so long to get data from cancer studies?

It takes a long time to gather and analyze the data, particularly, when many thousands of individuals are involved. After the study is completed, it must be reviewed by other scientists before it is published in the scientific literature. This review can take a long time, but is critical to establishing the validity of the study.

11. Do cancer studies include data on specific individuals?

Yes, in some studies information is gathered on all individuals who have had exposure to a particular chemical or group of chemicals. In other studies, individual information is only gathered on individuals who have the particular disease that is being investigated.

Aberdeen Q & A**3**

- 12. Have there been studies of how many people have cancer in the Aberdeen area? Have there been studies of the causes of these cancers?**

Not to our knowledge.

- 14. Has CMA been accused of using bad information in its studies of workers exposed to Vinyl Chloride? Who pay for the studies? How do we know the studies are not biased based on who paid for the studies? Does anyone disagree with the conclusion of these studies?**

CMA has not been accused of using bad information in its study. While it is true that it is the member companies of CMA that pay for these studies, CMA goes to great lengths to assure their scientific integrity. CMA chose to have the study of the vinyl chloride workers published so it would face the scrutiny of scientists who do not have any connection with industry. We do not know of anyone who disagrees with the conclusions of the CMA study.

- 15. What is the risk of breathing PVC dust?**

High levels of PVC dust exposure have been associated with changes in the lungs. These changes, though detectable, are not considered serious. Obviously, prolonged high-level exposure to PVC dust should be avoided.

- 16. We used to have benzene in the plant. What are the health effects of benzene exposure?**

Benzene exposure has been linked with the production of leukemia in humans. Exposure to benzene can also lead to dizziness, abnormal heart beat, fluid in the lungs and irritation of the lungs and the digestive tract. Long-term exposure can also hinder the formation of blood cells and damage the genetic information of cells.

- 17. What are the health effects of AMS (alpha- methyl styrene)?**

In animals, AMS exposure has been shown to produce effects on both the liver and the kidneys. In humans, AMS has been shown to produce irritation of the eyes, skin and upper respiratory tract. Prolonged exposure of humans to AMS has also been shown to lead to sleepiness and other signs of depression of the central nervous system.

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To	D.A. Penney	
Co.	TGC	

Q. What kind of cancer did Jim Debernardi die from?

A. Jim died from

Q. Were the early angiosarcoma deaths reported by the PVC industry from the Aberdeen plant?

A. No. There have been no reported cases of angiosarcoma at any Conoco chemical or Vista PVC plants. The reported angiosarcomas that resulted in the OSHA VCM standard were *initially* ~~reported in~~ ^{from} workers from a BF Goodrich PVC plant in Louisville, Kentucky.

Q. How many deaths have occurred at Vista/Conoco from VCM exposure?

A. There are no known or confirmed deaths that have been attributed to VCM exposure. Most of you are aware of current litigation that alleges an employee's death was a result of VCM exposure but this is not confirmed.

Q. When were LCVCM plant employees first told of brain cancer studies?

A. There are at least two times that plant employees were provided information in the 1970's. The first was a bulletin board posting of a letter from Jim Debernardi and the second time was a ChemNews article in _____ 1979. (Question - should we attach copies?). There were also employee meetings and information provided in 1989.

↑
I don't think so, just
have them available.

Q. What is the Odor Threshold for VCM and EDC?

A. Odor thresholds are difficult to specifically determine based on the wide range of individual sensitivities to odors. As a result there are few "official" odor thresholds determined, and most are reported in ranges. Based on a review of available studies the following is reported:

VCM

EDC

Q. Are any studies of VCM health effects going on now?

A. Vista is not aware of any ~~active~~ toxicity or epidemiological studies being done at this time.

Vista is discussing on update of the previous CMA Vinyl Chloride worker epidemiological studies with that organization. Vista is also reviewing the feasibility of studying the population of Vista workers. This may be difficult based on the small size of our worker population. This was pointed out by NIOSH in their ^{letter which} response to Vista's request for a Health Hazard Evaluation in 1990. That letter was provided to all employees.

Aberdeen O & A

Q. Do we have records of exposure to employees early in the life of the Aberdeen plant?

A. Routine sampling to measure individual employee exposure and general area VCM levels was not started until late 1974. At that time data was developed to measure exposures in the low parts per million range.

Prior to that time VCM measurements were made to evaluate safe conditions based on flammability or explosivity of atmospheres. These measurements evaluated much higher air levels, typically in the thousands of parts per million.

Q. Is there any specific ppm exposure level where you will get cancer.

A. It is not possible in most cases to determine a specific exposure level that will result in cancer. Specifically the OSHA permissible exposure limit of 1.0 ppm is based on the OSHA policy of setting exposure limits for carcinogens at the "lowest feasible level". It is not specifically determined based on the animal and human data available.

In fact, the American Conference of Governments ????????????????????????????????? 5.0 ppm is a safe exposure limit for VCM. (Should we elaborate on TLV's?)

Q. Paul Hubbard died of liver cancer. Is this death included in the CMA studies and did he die of angiosarcoma?

A.

~~The risk~~
The risk of getting cancer at a given exposure level varies from person to person. At the same level some might get cancer while others wouldn't. Most carcinogens are considered to be capable of causing in some people even at very low levels of exposure. However, the risk at these low levels of exposure are usually at a lower than other risks which all workers are exposed to.

What about something like this?

Q. Has the exposure to VCM been different in PVC plants?

A. ~~In general~~ It is believed that VCM exposures were higher in PVC plants in the 1950's, 1960's and early 1970's. This is a result of ^{the different ~~control~~} ~~several reasons specific to the~~ processes used. ^{at the time}

The process used in the past was a batch process that required routine entry and cleaning of the PVC reactors. Also, the amount of removal vinyl chloride in the PVC product was [?] higher. Significant process changes in the early 1970's resulted in significant decreases in exposure potential.