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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, which was published in 1991, 161 cases had been entered into the registry. Thirty-nine 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 published. 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?**

Yes, there are studies showing that chemical workers exposed to certain chemical processes have a higher risk of some forms of cancer.

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

Vista maintains medical records on its employees. These records may contain some of this information, however, they have not been studied to determine whether any particular plant is at an increased risk of cancer. This is something that Vista is planning to initiate soon.

4. **How is the information on the cause of death collected in human studies?**

The cause of death is obtained from the death certificate of the individual. 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 cause of death because this information is the most feasible 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 Dave Penney take into account exposure to other chemicals besides vinyl chloride?**

Most of the studies of workers engaged in VCM or PVC manufacturing or processing have not taken potential exposure to other chemicals into account. This is because the primary health concerns have been associated with vinyl chloride.

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

Acute (short-term) TCE exposure has been associated with a number of effects. TCE can cause 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 inhaling high concentrations of TCE.

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 determine whether a chemical causes cancer. Evidence that a chemical causes cancer in animals may be a good indication that the chemical is capable of causing cancer in humans also.

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9. Why does it take so long to get data from human 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 is 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.

10. Do human cancer studies include data on specific individuals?

Yes, in some studies information is gathered on all individuals who have 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. In most cases, individual death certificates are used to obtain useful information.

11. 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.

12. Has CMA been accused of using bad information in its studies of workers exposed to vinyl chloride? Who pays for the studies? How do we know the studies are not biased 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 studies. 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 has challenged the validity of the CMA study.

13. What is the risk of breathing PVC dust?

Data from studies of animals exposed to PVC indicate that PVC itself possesses little or no biological activity. Exposure to high concentrations can cause irritation of the respiratory tract and other conditions typical of a nuisance dust.

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

Acute (short-term) 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 benzene exposure has been linked with increased risk of leukemia, hindered formation of blood cells and damage of the genetic information of cells of humans.

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

In animals, AMS exposure has been shown to produce adverse 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 been shown to lead to sleepiness and other signs of depression of the central nervous system.

16. **Do we have records of exposure to employees early in the life of the Aberdeen Plant?**

No. 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.

17. **Is there any specific ppm exposure level where you will get cancer?**

It is not possible in most cases to determine a specific exposure level that will result in cancer. The risk of getting cancer at a given exposure level varies from person to person. Most cancer causing agents are considered capable of causing cancer in some people even at very low levels of exposure. However, the risk at such levels of exposure are usually at or lower than other risks which all workers face.

The OSHA permissible 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 animal and human data. In fact, American Conference of Governmental Industrial Hygienists consider 5.0 ppm a safe exposure limit for VCM.

- 18. Is Mr. Paul Hubbard's death included in the CMA studies and did he die of angiosarcoma?**

We understand Mr. Hubbard died in 1985 or 1986. His death would not have been included in the last CMA update since it only included deaths which occurred between 1972 and 1982. We do not know the specific cause of Mr. Hubbard's death.

- 19. Where can I get additional information about the health risks of chemical exposure?**

This document is an attempt to answer specific questions that have been raised about the health effects of vinyl chloride exposure. If you have other questions about the health effects of exposure to vinyl chloride or any other chemicals, you may call Chris Markerson (extension #3618) or Dave Penney (512-331-2468).