BENZENE QUESTIONS AND ANSWERS

Q1. What is an epidemiology study and what is meant by statistically significant?

A1. An epidemiology study looks for links between disease and pre-existing factors which could be causes. In industry, we look especially at chemical exposures as potential causes.

In these studies, the numbers of cases of a disease or deaths from specific cause in one group of workers are compared with the numbers expected for a similar group in size, age and sex if possible.

Differences between observed and expected numbers are tested by standard statistical methods. Small deviations in either direction are attributed to chance and are not considered statistically significant.

Q2. Do the studies indicate that the risk of leukemia is greater at higher benzere exposures such as existed in the past than at lower exposures?

A2. The CMA study does indicate a higher incidence of leukemia among those exposed to higher levels. We have not completed our own analyses of the Repauno data, but at this time such a relationship does not appear to exist.

Q3. What is the OSHA standard for exposure to benzene and how does it compare to plant employee exposures today?

Q3. In the past, benzene exposure limits were agreed upon by government and industry health experts. The limit was set in 1946 at 100 ppm and was subsequently lowered to 50 ppm in 1947, 35 ppm in 1948, 25 ppm in 1957 and finally, 10 ppm in 1969. Federal regulation began in 1971 when OSHA adopted the current limit of 10 ppm for an 8-hour Time Weighted Average (TWA). Peak exposures of 25 ppm are permitted for periods of up to 15 minutes. Personal monitoring at all Du Pont plants, including Repauno, has shown employee exposures to be well below this limit. Exposure levels at all plants are well below levels at which adverse health effects are likely to occur. (For Repauno use only: With the exception of the N.B. operator, all jobs monitored during the past three years have consistently been below 1 ppm exposure an 8-hour TWA. Exposures of .07 to 5.4 ppm have been measured for the N.B. operator. However, actual exposure would have been less because respirators are worn during periods of peak exposure. The air monitoring reflects benzene content in the breathing zone but does not reflect air quality as breathed through a respirator.)

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Q4. I have heard discussion of a possible change in the OSHA standard to 1 ppm for benzene. Is there anything currently being done to further reduce benzene exposures on plant?

A4. Based on air monitoring results at Beaumont where similar facilities exist, we expect the open air construction of the DHN N.B. process to be started up in the near future and it will reduce benzene exposure for the N.B. operator. In the interim, we will continue to do task related air monitoring to identify potential areas for improvement. If areas are identified where exposures should be reduced and reductions cannot be feasibly engineered (i.e., through procedure changes, additional ventilation or requirement modifications), increased use of respirators may be required.

Q5. Why were the 884 employees chosen out of the 5,000 employees that worked at Repauno during the period studied?

A5. Plant records indicated that they were the employees who worked in the benzene area.

Q6. How many of the employees with leukemia and how many of those with bladder tumors are still working at the plant?

A6. None of the potentially exposed people who had leukemia is still working at Repauno. One of the people with a bladder tumor is still working at the plant.

Q7. Do the studies indicate that current conditions are dangerous to immediate or future employee health?

A7. No. We believe our present procedures are more than adequate in ensuring the continued health and safety of our employees who may be exposed to benzene. In fact, employee exposure to benzene is significantly below the OSHA-approved level of 10 ppm, TWA 8-hour. We are continuing efforts throughout the company to minimize employee exposure to benzene.

Q8. Are there any medical screening tests that I should be routinely given?

A8. The Company routinely gives blood tests, including a blood count, to all employees as part of our regular annual and biannual physical examination program. These blood tests are designed to identify a range of blood disorders including those associated with exposure to benzene.

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Q9. When health problems are found by medical, are employees informed? Have all employees who had a disease been informed?

A9. Yes. Employees are informed of any health problems which have been found by Medical. This is in accordance with Company policy and good medical practice. The employees who were included in the study and have been diagnosed as having a disease have been informed. We are working with them to ensure they receive the proper medical treatment, depending on the type of disease diagnosed.

Q10. Is there any scientific evidence of benzene causing cancer other than leukemia?

A10. The recently completed CMA study showed a slightly higher, though not statistically significant mortality rate from lymphatic and hematopoietic (hem'ah-to-poi-et'ik) cancer among persons exposed to benzene. (Note: hematopoietic cancer is a condition of cancer of the body's blood-forming system.) We have just recently heard reports that several animal studies have shown solid tumors. This is the first time we have seen that benzene produces solid tumors in experimental animals. We have not seen the final studies, since they are still in draft form.

Q11. Did the Repauno and the CMA studies include the same individuals? Why was there a difference in the findings?

A11. No. The CMA study included only those Rapauno employees whose exposure to benzene was after 1957. It also included another 6,800 workers at six plants in six companies, including Du Pont's Sabine River Works, Texas.

Q12. Did the CMA study indicate an excess of bladder tumors?

A12. No. The CMA study did not indicate such an excess.

Q13. Do the Repauno and CMA studies conflict in any way?

Q13. These studies differ in results in that the Repauno studies showed excess bladder cancer cases, whereas neither the Repauno nor CMA studies show excess bladder cancer deaths.

Q14. You've indicated that the CMA study results were different when company workers on the same plant were used for comparison. Is there a reason for this?

A14. The non-exposed workers in the control group had an unusually good health record. For example, there were far fewer deaths from leukemia and other cancers than we would have expected in this group based on general U.S. population statistics.

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Q15. I understand that acute myelogenous leukemia is the disease most commonly associated with high levels of benzene exposure. How many deaths in the CMA study were attributable to that disease?

A15. You're correct. Acute myelogenous leukemia is most commonly associated with high levels of exposure to benzene. However, no deaths were found in the study from this type of leukemia.

Q16. Are the exposure levels in the CMA study the same today as they were in the years of exposure covered by the study?

A16. Probably not. The cases of leukemia and bladder tumors occurred in employees potentially exposed to benzene during plant operations in the 1950's, when possible carcinogenic effects were not well recognized and operating procedures and personal protection were less stringent.

Since the 1950's the plant has taken a number of steps that have reduced potential exposure. Facilities have been modified by converting from batch to continuous operation, relocating controls from the operating area to a central control room and installing a powered exhaust system. Procedures have been improved by adding elastomeric glove and respirator requirements.

Q17. You say that the CMA study compared deaths to the general population. Did the study also look at the incidence of disease as the Repauno study did?

A17. No. The CMA study only looked at deaths. This is because, unlike Du Font, many companies do not keep useful records for studies of incidence of disease.

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