STATEMENT OF

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16. Abstract (Limit: 200 words) This testimony concerned possible hazardous working conditions at the Hill Air Force Base in Ogden, Utah. A NIOSH team visited the Base between April 27 and May 2 of 1978 to determine whether there was a problem in Building 100. The Air Force had requested the assistance of NIOSH concerning the apparently high number of cancer cases among workers. There were about 800 employees working in Building 100 at the time of the survey; most were engaged in the repair and overhaul of optical, electronic and electromechanical systems. A large number of solvents were used throughout this building along with other chemicals associated with paint stripping and spraying, soldering, and silk screening. The study indicated there had been occupational safety and health problems at this site in the past including the mishandling of solvents and lack of employee participation in safety and health issues. Although the number of cancer cases reported in former and current employees was lower than would be expected, there appeared to be a high proportion of cases of cancer of the blood and blood forming organs, and malignant myelomas. The Air Force was encouraged to work at establishing a good occupational health program at the base to protect current employees and maintain adequate records for future studies. Other recommendations included the analysis of cancer cases using the Utah State Cancer Registry, the collection of industrial hygiene data to determine compliance with standards and characterize exposure for future health effects studies, the identification of trade name chemical constituents, the improvement of the current medical monitoring program, conducting prospective or cross sectional medical studies, conducting a thorough investigation of employee grievances, and improvement of inspections at the base.

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I am pleased to be here today to discuss the National Institute for Occupational Safety and Health (NIOSH) investigation of possible occupational health problems at the Hill Air Force Base in Ogden, Utah. Accompanying me are Mr. Philip J. Bierbaum, Acting Director of the NIOSH Division of Surveillance, Hazard Evaluations, and Field Studies and Mr. Denny Dobbin, leader of the NIOSH team that conducted the investigation. Under the Occupational Safety and Health Act of 1970 and Federal Executive Order 11807, the head of each Federal agency is responsible for establishing and maintaining an effective and comprehensive occupational safety and health program consistent with standards promulgated under the Act. Upon request, NIOSH serves as a consultant to other Federal agencies in evaluating and improving their programs.

NIOSH Investigation

Between April 27 and May 2, 1978, a NIOSH team visited Hill Air Force Base in Ogden, Utah to determine whether there was an occupational health problem in Building 100. Employees in that building had become concerned when they noticed what seemed to be an unusually high number of cancer cases among their fellow workers. In March 1978, three Hill Air Force Base employees sued the Air Force for $1.5 million each, alleging that the Air Force had exposed them to toxic substances and unsafe working conditions. They also filed a complaint with the American Federation of Government Employees (AFGE) alleging that the exposures and working conditions had contributed to the deaths or illnesses of 44 workers.

NIOSH was asked by the Air Force to assist in determining whether

there was excess cancer among present and former workers employed in Building 100 and to evaluate the current working conditions. NIOSH worked with a team from the Office of the Air Force Surgeon General. The Air Force was primarily responsible for evaluating current working conditions in Building 100 and NIOSH was primarily responsible for evaluating the possibility of an excess cancer risk at the base. NIOSH worked closely with local union representatives of AFGE and with management representatives at the base. The union, which represents about one-third of the employees, was particularly helpful in identifying tumor cases possibly related to occupational exposure.

The base is one of six Air Force maintenance facilities in the United States under the Air Force Logistics Command. There are approximately 20,000 civilian employees at the base engaged in all phases of maintenance, including complete overhaul of aircraft and missile systems. About 800 employees worked in Building 100 at the time of the NIOSH visit. These employees were primarily electronic technicians and instrument workers who repair and overhaul optical, electronic and small electro-mechanical systems.

There are a large number of solvents in use throughout the building, including 1,1,1 trichloroethane, methylene chloride and fluorocarbons. In addition there are chemicals associated with paint stripping and spraying, soldering, and silk screening. Skin contact with solvents can cause dermatitis, and excessive inhalation may cause lack of coordination, dizziness or drowsiness which may increase the risk of accidents. Overexposure to some of the chemicals in the

building can cause serious damage to the blood, lungs, liver, kidneys, nervous system or gastrointestinal tract. Two chemicals previously used in the building, trichloroethylene and chloroform, have been shown to produce tumors in animals and are considered to be suspect human carcinogens.

The NIOSH team examined the records at the base to determine whether an epidemiologic study could be conducted relating past occupational exposures to excess cancer among current and former employees. The preferred epidemiologic study would require the name, social security number, date of birth, race, sex, work history and vital status of all current and former workers. Cause of death would be needed for all deceased workers. A valid, although less conclusive study, could also be conducted by obtaining detailed information on all former employees who had died. A third kind of study could be conducted by identifying each person who worked at the plant and evaluating the data on all those who developed cancer.

NIOSH learned from the Air Force that they did not keep a record of all former civilian employees. Once an employee was terminated, his records were sent to the Federal Record Retention Center, where they were retrievable by name or social security number, but not by place of employment.

In addition, current operations began at the base in the mid 1960's. Since the latency period for occupationally-related cancer is generally 25 to 30 years, there probably has not been sufficient time for most occupational cancer to become manifest.

Because of the inability to obtain good personnel and exposure records for the last 20 or 30 years, the NIOSH team concluded that it would not be possible to conduct a thorough epidemiologic study at this time. It would be possible, however, to obtain some useful information by reviewing known cancer cases and deaths among employees to see if any trends or clusters could be identified.

The team was more optimistic about reconstructing past exposures and work practices. They learned that an industrial hygiene program had been in existence in Building 100 since 1968, although most of the samples were taken for short time periods in response to complaints. However, current eight-hour and peak exposures could be obtained for all major job categories and the data used to estimate past exposures. Older employees could be interviewed to determine whether work practices and personal protective equipment had changed over the years and records on the amount of various substances ordered could be examined. Such information could be extrapolated to give some idea of past exposures and work practices.

NIOSH also reviewed a list of complaints about working conditions or medical problems submitted by 45 employees in Building 100. Many of the medical conditions reported were those frequently observed in the general population--such as heart disease--and there was no obvious reason to suspect they were occupationally related. Other symptoms listed--such as nausea, headaches, dizziness, numbness of fingers and skin rash--could well be related to solvent exposures. NIOSH encouraged the Air Force to evaluate all reported symptoms carefully and to

institute control measures when the symptoms seemed to be related to exposures.

Employee Interviews

During their visit to the Air Force Base, NIOSH staff also met with several union members and other employees to learn about their experience with how occupational safety and health issues were handled at the base. The employees reported a number of unsafe and unacceptable work practices, particularly involving the use of solvents. Reports of poor past work practices included cleaning bench tops with rags saturated with solvents, including chloroform, washing hands with solvents, and using compressed air solvent spray guns. Solvents had been stored and dispensed in small, poorly ventilated rooms.

Employees in Building 100 informed us that they were concerned about losing their jobs if they reported symptoms they thought might be job-related. The few who had tumors diagnosed were very concerned about determining whether their medical condition was related to past exposures. Many of the employees we interviewed also reported that the Air Force had cleaned up Building 100 shortly before the visit of the investigating teams. There was general agreement that supervisory training in occupational safety and health was inadequate, although awareness of the need for safe use of chemicals had increased over the last five years. We recognize that the information we obtained from the employees may not have been a cross-section of workers' opinions. Nevertheless, it has been our experience that workers are often the first to know about harmful effects of toxic substances and their

complaints should be thoroughly investigated without fear of disciplinary action or job discrimination.

Recommendations for an Occupational Health Program

On May 8, 1978, NIOSH issued a report making eight recommendations to the Air Force for improving their occupational health program. On November 24, 1978, and March 23, 1979, the Air Force responded to our recommendations. The following is a summary of the recommendations, the Air Force response, and our comments. We are also preparing more detailed comments of the information we received from the Air Force in March.

1. Analyze cancer cases using the Utah State Cancer Registry. Names of cancer victims among persons known to have been employed at Hill AFB should be sent to the Utah State Cancer Registry for verification. Information on the individual case, including tumor site, and age of the individual when the tumor was reported, would be sent to NIOSH for analysis of clustering or trends.

Air Force Response:

In November, the Air Force submitted a list of 60 confirmed cancer cases among present and former workers at the base. The names were obtained from workers, management, and family and friends. By March, NIOSH had received information on 107 people who were alleged to have cancer. Of these 107, 67 have been confirmed by the Air Force to have cancer.

NIOSH Comments:

It was difficult to draw any conclusions from evaluating the 60 reported cases since they are only a portion of the total cancer cases among all present and former employees. For the same reason, it was not possible to assess risk among those who worked in Building 100. Based on the rates reported by the Utah State Tumor Registry, the 60 cancer cases reported to us in November were about one sixth as many as you would expect to find in this population. In spite of the incomplete nature of the list, we made some interesting observations. Initial analysis shows what appears to be a high proportion of cases of cancer of the blood and blood-forming organs, which may have a shorter latent period than many other cancers, and a high proportion of cases of

malignant myelomas when compared with the distribution of cancer cases observed in the NCI Third National Cancer Survey. We are making a more thorough analysis comparing all 67 cases supplied by the Air Force with statistics from the Utah State Tumor Registry.

2. Collect industrial hygiene data to determine compliance with standards and characterize exposure for future health effects studies.

Air Force Response:

The Air Force conducted an industrial hygiene survey to evaluate worker breathing zone exposures for fifteen chemical agents. They reported that no airborne concentrations of the chemicals sampled exceeded 16 percent of the threshold limit value guidelines established by the American Conference of Governmental Industrial Hygienists (ACGIH TLV's) or NIOSH recommended standards.

NIOSH Comments:

Although the Air Force documents contained technical errors and omissions, which we pointed out to them, the conclusions were supported by the methods and results reported. We recommended that the Air Force publish the documents to assist other health professionals in protecting workers in similar operations.

3. Identify trade name chemical constituents by searching NIOSH trade name file.

Air Force Response:

In March, the Air Force notified us that frequently used chemicals had been identified by the base chemistry laboratory and the other trade name chemicals were in the process of being identified.

4. Improve the current medical monitoring program by
   a. conducting annual medical examinations on selected employees; b. monitoring workers for solvent exposure by urine or
      breath analysis;
   c. reviewing medical and environmental data together to evaluate trends
   d. encouraging occupational physicians to visit work areas at least once a week to become familiar with types of duties performed and work practices used.

Air Force Response:

In March, the Air Force notified us that they were changing their medical program to provide annual examinations for those employees required to be covered by the Air Force Occupational Safety and Health Standard 161-8. These employees would receive baseline and periodic examinations to detect changes in target organs of the chemical exposure involved. Biological indicators of exposures, such as blood or urine

levels, would be monitored when appropriate and complete medical and chemical exposure histories would be taken.

The Air Force reported that occupational physicians are conducting work site visits three times per week. The physicians review environmental data in each shop they visit as well as medical records of selected persons to see if there is a relationship between the workplace and the workers' symptoms.

The Air Force reported that they had improved their existing program of periodic special medical examinations. Their "review of selected records of people who work in Building 100 and are part of the hazardous area physical examination program did not reveal any abnormalities." In addition, the Air Force physicians examined 151 volunteers who were not in the hazardous area category. In this group, there were certain abnormal findings such as hypertension, high blood sugar or glycerides. However, they concluded that "nothing was found to reveal any contributing factors or causes of cancer of any kind in relation to Building 100. Many physical illnesses and pathological conditions . . . were related to the aging and other physical factors and not due to anything pertaining to Building 100."

5. Consider conducting prospective or cross-sectional medical studies with an independent occupational health research group.

Air Force Response:
No decision has been made on this recommendation.

6. Conduct a thorough investigation of employee grievances related to unsafe and unhealthy work practices.

Air Force Response:
In March, the Air Force reported that all past grievances were investigated and some changes in work practices were made as a result. They stated that all present and future grievances would be investigated with employees guaranteed full protection.

7. Encourage management-labor committees to emphasize occupational health issues and jointly address problem areas, involving bioenvironmental engineers and occupational physicians in this effort.

Air Force Response:
In March, the Air Force reported that they had published an Occupational Safety and Health Programming Plan.

8. Improve inspection of facilities to insure that representative environmental conditions are observed.

Air Force Response:

In March, the Air Force reported that they were conducting 120 unannounced safety inspections and 60 unannounced environmental health inspections each month.

CONCLUSION

After evaluating working conditions and talking with management and employees in Building 100, the NIOSH team concluded that there had been occupational safety and health problems there in the past. These problems included the mishandling of solvents and lack of employee participation in safety and health matters. The effects of these past exposures may not yet be apparent. Prospective and cross-sectional medical studies might well be able to provide more accurate information about the long-term health effects of these exposures. We would continue to urge the Air Force to sponsor such studies with an independent occupational health research group.

We would also urge the Air Force to continue to work at establishing a good occupational health program at the base so that current employees are protected and adequate records will be available for future studies. A key element in such a program is to keep employees and supervisors fully informed about potential hazards on the job and encourage their participation in evaluating working conditions. The ultimate goal is to design work environments and job procedures that minimize hazards to employees as well as maximize productivity.

We recognize that we are describing some of the elements of a model occupational safety and health program and that putting it into practice will not be a simple task. However, we believe that the Federal Government should make that effort and take the lead in assuring its

employees safe and healthful workplaces. We would hope that the lessons learned at Hill Air Force Base can be translated into strong occupational safety and health programs at other Federal facilities.