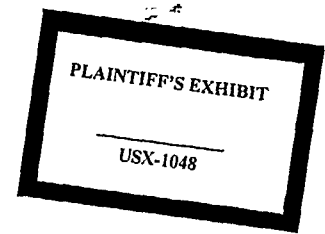




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Asbestos Overview

United States Steel Corp.

Frederick M. Toca, Ph.D, CIH, CSP

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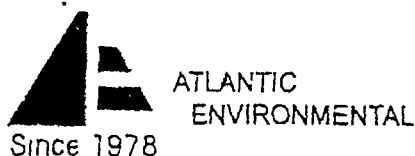
I am a practicing Industrial Hygiene, Toxicology and Workplace Safety Professional. I am experienced in evaluating the workplace for potential hazards by analyzing work practices, measuring and evaluating exposures to toxic substances and hazardous conditions, then determining and controlling the nature and extent of risk to the health of workers. I have been actively involved in the practice of Industrial Hygiene, Toxicology and Workplace Safety since 1966. My experience has included being an Analytical Laboratory Director, a Field Industrial Hygienist, and the General Manager/Director of Occupational Health and Safety Programs and OSHA compliance for several major corporations. I hold a Bachelors of Science degree in Biology and Medical Technology, from Xavier University of Louisiana. I have a Master of Public Health degree in Industrial Hygiene and Air Pollution from the University of Michigan and a Ph.D in Preventative Medicine, specializing in Industrial Hygiene and Toxicology from the University of Iowa. A copy of my most current Curriculum Vitae, which sets forth the details of my education, experience and accomplishments is attached.

I am currently the President of Atlantic Environmental, Inc. (AEI) located in Dover, NJ. AEI is a full service Industrial Hygiene, Safety and Environmental Consulting firm.

I am certified in the Comprehensive practice of Industrial Hygiene by the American Board of Industrial Hygiene. I am also certified by the Board of Certified Safety Professionals as a Certified Safety Professional.

I have been involved in asbestos related Industrial Hygiene issues since 1968.

In 1972, as the director of an industrial hygiene laboratory, I analyzed and oversaw the analysis of samples for asbestos. Both before and after 1972, I personally collected hundreds of samples for asbestos in the workplace, from many different operations. I have also supervised the collection of asbestos samples by other Industrial Hygienists from many diverse operations. In addition, I have conducted laboratory studies to evaluate the potential for exposure to workers from asbestos containing materials.



I have reviewed many published studies conducted by other health and safety professionals regarding fiber release from asbestos containing materials and studies of asbestos exposure. These studies were conducted using proper professional Industrial Hygiene techniques and in a scientifically acceptable manner, typical of the type of studies and evaluations that are used by Industrial Hygienists, Toxicologists and other Occupational Health Scientists.

The opinions expressed in this report are based on my professional training and experience and published scientific information concerning health risks associated with asbestos exposure.

OVERVIEW: THE US STEEL INDUSTRIAL HEALTH, SAFETY AND HYGIENE PROGRAMS

As a former manager and director of the United States Steel (USS) Industrial Hygiene, Safety and OSHA Compliance Programs, I am familiar with these programs, both from my review of historical documents and my personal involvement.

As early as 1908, USS established a company wide safety committee. The purpose of this committee was to hold meetings and discuss the best ways to prevent accidents, conduct plant safety inspections and safeguard employees' health.

In addition to the Corporate Safety Committee there were Plant Safety Committees. These Plant Safety Committees were made up of foreman and workers, who made regular inspections and made suggestions as to how to prevent injuries and accidents. Each plant also employed full-time safety experts whose job it was to prevent injuries and accidents. Between 1906 and 1911 accidents in USS facilities were reduced by 43%.

In 1936 the USS Plant Design and Renovation Committee recommended that every plant identify health hazards "... in the material operated upon or processed, or used" This committee also recommended that dusty processes be isolated to avoid contamination of the plant air. These recommendations are consistent with good industrial hygiene practices which are still carried out today.

As early as 1937, USS conducted measurements in its plants to determine the potential for employee exposure to dusts, fumes, vapors and gases. This was at a time when the profession of Industrial Hygiene was in its infancy and standard methods for sampling and analysis were not yet developed. During this period, workplace measurements at USS were made by plant safety engineers, plant chemist or other scientist working in the organization.



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Plant physicians and nurses also played a key roll in environmental health at USS during the early 1900's. In addition to treating sick and injured employees, these health professionals observed employees for signs of health impairment related to work. On the basis of their professional observations, actions were taken to reduce potential exposures in the workplace.

Beginning in the 1930's, USS practiced Industrial Hygiene principles and in 1952 initiated its formal Industrial Hygiene Program by employing a full-time corporate Industrial Hygienist. Industrial Hygiene was installed as an engineering activity directed towards the study and control of work conditions known or suspected to be harmful to health. This program was made a part of the medical division and was charged with the responsibility of investigating potential health hazards then making recommendations to management on how to control or eliminate these workplace hazards.

By way of an administrative policy the Industrial Hygiene section operated as the research area of the safety department in the Steel facilities. This relationship made it possible for the Industrial Hygiene function to be present via safety personnel at all facilities. In addition, the corporate Industrial Hygiene staff spent more than 45% of its time and efforts in the plants doing surveys, collecting samples, and providing Industrial Hygiene consultations.

The USS Industrial Hygiene program used the "Threshold Limit Values" (TLV's) as the guidelines for controlling workplace exposures. There were no federal workplace standards at that time and the TLV's were considered the "Gold" standard for Industrial Hygiene practice. TLV's continue to be one of the most professional and respected guidelines in the profession of Industrial Hygiene today.

The Threshold Limit Values are based upon the principle that the dose or amount differentiates a "poison" from "remedy". This principle was first expressed in the 1500's by the scientist Paracelsus, who is known as the Father of Toxicology. Industrial Hygienists have operationalized this principle in order to protect the health of working men and women. This is accomplished by first recognizing the presence and amount of a toxic substance present then eliminating or controlling the amount of the toxic substance to a non-hazardous level.

Threshold Limit Values and OSHA Permissible Exposure Limits apply this principle by using these governing rules:

1. There is a systematic dose response relationship between the amount or magnitude of exposure and the degree of response in the exposed population; and;
2. There is a measurable decrease in risk of injury as the level of exposure goes down, and in fact, this risk of injury becomes negligible at some point (i.e. when exposure goes below a certain tolerance level there is no response - i.e. the "no effect level").



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The importance of the relationship between concentration (dose) and response has been established in both theory and practice of toxicology and Industrial Hygiene. A major accomplishment of the profession of Industrial Hygiene has been to first define then control levels of exposure below the levels where destructive function and impairment can occur.

And the fact that workers whose exposure is maintained below TLV's and PEL's have not developed disease is proof that there is no effect when the principles of dose-response are properly applied to the workplace.

In addition to controlling the workplace environment by engineering controls that reduce the level of exposure, the USS Safety and Industrial Hygiene Organizations worked together to develop work practices that would avoid worker exposures. These work practices were called "Safe Job Procedures" SJP's.

USS also conducted, participated in and/or sponsored research studies aimed at determining the impact of work on the health of its employees.

During the early 1950's, USS studied workers in its Clairton Coke Works to see if these employees had an increased incidence of cancer when compared to the general population. This first study showed that cancer was not more prevalent in these workers; however the statistical power of the study was limited because of the small population studied. For this reason, USS joined a larger study with 13 other companies to have a more definitive evaluation of this situation. The USS Industrial Hygiene and Medical section represented USS on the panel of the combined company study group.

Through the years USS participated in other studies and evaluations aimed at defining the impact of work upon the health of its workers, one of these studies was the "Mortality of Iron and Steel Workers" conducted by Dr. J. W. Lloyd.

The Lloyd study looked at a cohort of 57,072 Allegheny County Steel workers.

In the 1960' & 70's Industrial Hygiene section increased the number of Industrial Hygienists in the corporate office and placed resident Industrial Hygienists in some larger facilities, thus increasing the impact of Industrial Hygiene and the protection of USS employees.

During the 1980's as the Director of Industrial Hygiene, Safety and OSHA compliance for USS, the primary focus continued to be the protection of the health of the USS employees. The emphasis of these programs during this time was to remain at the forefront of both technical and managerial aspects of the delivery of these services, so that USS employees benefited.



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This policy is applied by USS through the following administrative mechanisms:

1. Furnishing work places free from recognized hazards which are likely to cause injury, illness or death.
2. Complying fully with Industrial Hygiene, Safety and Health regulations and laws and USS policies and guidelines.
3. Recognizing the high priority of Industrial Hygiene, Safety and Health factors where there is competition with economic factors.
4. Providing a professional staff to support the Industrial Hygiene and Safety Programs.
5. Holding all managers accountable for the Industrial Hygiene and Safety performance of their activity and measuring their achievement in controlling these responsibilities.
6. Training employees in safe procedures and requiring compliance with Industrial Hygiene and Safety Regulations and Procedures.
7. Developing and applying better methods for reducing the human and economic costs of accidents, illnesses, and work-related diseases.
8. Continually monitoring progress toward a more healthful and hazard free workplace environment.

The USS Industrial Hygiene and Safety program evolved as the profession and science grew. This growth within USS paralleled the knowledge about the hazards of asbestos in the scientific and occupational health community. Throughout its history, USS has employed recognized Industrial Hygiene procedures and practices to protect the health and safety of its employees.

In the 1930's when exposure to asbestos dust in the asbestos industry was recognized as a "danger to health", (Merewether). USS, while not in the asbestos industry, was working to control all dust exposures to its employees.

In 1946 when the US Public Health Service published a study (Fleisher) showing that pipe covering operations in Naval vessels (insulators) was a relatively safe occupation. USS continued to use engineering controls to remove dust in facilities.

In the 1950's USS used the Threshold Limit Values as guidelines to protect its employees.

In 1970 with the inception of the Occupational Safety and Health Act (OSHA), USS complied with the regulations regarding workplace hazards including asbestos and implemented plant programs to identify the presence of asbestos containing materials and where necessary to remove these materials.



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CONCLUSIONS

I have reviewed historical documents regarding the USS Health, Safety and Industrial Hygiene Programs. A review of these programs showed that USS acted responsibly to protect the health and safety of its employees. In the early 1900's, USS was a leader in the Industrial Safety movement. As a better understanding of the relationship between work and its impact upon health became known in the scientific community, USS implemented programs to reduce and/or eliminate employee exposure to hazardous substances. These programs were appropriate for the time and scientific knowledge of that day.

It is my opinion with a reasonable degree of scientific certainty that throughout its history, United States Steel Corporation acted in accordance with the principles of good safety and Industrial Hygiene practices, in protecting its workers.

Frederick M. Toca

Frederick M. Toca, Ph.D, CIH, CSP

3/5/02
Date

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