Lead Industries Association, Inc.
292 Madison Avenue • New York, N. Y. 10017 • Telephone: (212) 532-2373

Environmental Health Department

December 14, 1979

TO: All Official Members of the Lead Industries Association, Inc.
All Members of the LIA Environmental Health Committee

FROM: Jerome F. Cole

On October 23, 1979, OSHA published in the Federal Register Appendices A,B and C to the Occupational Standard for Lead. These were circulated with a memorandum from Dr. Lynam on November 5, 1979.

Reference to these Appendices is made in various provisions of the Standard,29 C.F.R. §1910.1025, including sections (j) (3) (iv) (A) (1); (ℓ) (1) (i); (ℓ) (1) (v) (A); and (ℓ) (2) (i). Sixty days from the publication date are provided to put into utilization the Appendices as required by the Standard.

Section (j) (3) (iv) (A) (1) specifies that copies of the regulation, including all Appendices must be provided to physicians conducting medical examinations or consultation under the Medical Surveillance section of the regulation.

Section (ℓ) (1) (i) requires that employees exposed to airborne lead at any level be informed of the content of Appendices A and B. We have been advised by the OSHA Office of Compliance that a logical interpretation would be that the information should be provided to any employee on whom an "initial determination" under section (d) (2) is or was made.

Section (ℓ) (1) (v) (A) requires that employees be informed of the content of the Standard and its Appendices.

Section (ℓ) (2) (i) requires that a copy of the Standard and its Appendices be made readily available to all affected employees.

Enclosed please find a summary of each of the Appendices which could be used in providing employees with information on the contents of the Appendices. However, actual copies of the Standard and Appendices must be provided to physicians carrying out medical surveillance under the regulation and must be kept in an accessible location should any employee wish to examine them.

Please note, these provisions must be complied with by December 24, 1979.

Sincerely,

Jerome F. Cole

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Director, Environmental Health

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Appendix A, which is entitled "Substance Data Sheet for Occupational Exposure to Lead," contains sections on "Substance Identification" and "Health Hazard Data."

The "Substance Identification" section briefly describes lead and its physical and chemical properties; the fact that the new lead standard covers exposure to elemental lead and inorganic lead compounds, but not organic compounds with the exception of lead "soaps"; major uses of lead; and the Permissible Exposure Limit (PEL) and Action Level of 50 ug/m^3 and 30 ug/m^3, respectively, based on an average 8-hour working day exposure.

The section entitled "Health Hazard Data" contains two sections. One section points out that lead can enter the body through either breathing or eating lead and that lead will build up in the body if the intake is greater than the output of lead in the urine or feces.

The second Section consists of four subsections and presents OSHA's views on the health effects of over-exposure to lead; OSHA's opinion on the levels of lead in the blood associated with various health effects; and OSHA's advice on reporting any signs or symptoms of health problems.

The sub-sections on health effects point out that the short-term intake of extremely large quantities of lead (which OSHA describes as being "highly unusual, but not impossible") may result in very serious illness and, in some cases, even death. Longer term exposure at lower, but still excessive levels may result in anemia, damage to the nervous system, kidneys and reproductive system. Symptoms of each of these effects are described. Although it is difficult to correlate individual blood-lead levels with particular physical effects, OSHA contends that the risk of encountering such effects increases when blood lead levels exceed 40 ug/100 g and points out that the provisions of the standard have the goal of keeping blood lead levels below 40 ug/100 g. While the employer has primary responsibility to comply with the provisions of the standard, employees also have a responsibility to protect their own health.

Employees should notify the employer if they develop signs and symptoms which might be attributed to lead poisoning. Also, the employer should be notified if the employee has any difficulty breathing while wearing a respirator, or if the employee wishes any medical advice concerning the possible effects of present or past lead exposure on his/her ability to have a healthy child. The employer is required by the standard to provide employees with the appropriate medical examinations and consultation.

Appendix B, which is entitled "Employee Standard Summary", contains 15 sections summarizing the contents of the lead standard.

This appendix describes each requirement of the standard, noting those sections which are in force, those which take effect at a later date, and those which are presently stayed by the U.S. Court of Appeals pending a decision on the validity of the entire standard. The major points made in the 15 sections are as follows:

I. Permissible Exposure Limit (PEL) - This section notes that the PEL is 50 micrograms of lead per cubic meter of air, averaged

over an eight-hour working day. There is also a correction formula should shifts be longer than 8 hours per day.

II. Exposure Monitoring
This section describes the types and frequency of air monitoring which must be carried out by employers. Monitoring need not include every employee, but must be representative of job types. Employers are required to notify employees of air sampling results.

III. Methods of Compliance
While the OSHA standard requires that the PEL be met by engineering controls and work practice controls, it is noted that this portion of the standard has been stayed by the U.S. Court of Appeals. For the present, the PEL may be met through the use of respirators.

IV. Respiratory Protection
This section describes the regulations dealing with the proper selection, fit, and use of respirators. The standard provides that employers must provide respirators to any employee who desires one; the requirement to provide powered air purifying respirators has been stayed by the U.S. Court of Appeals.

V. Protective Work Clothing and Equipment
If employees are exposed to lead above the PEL or to certain lead compounds which can cause skin and eye irritation, appropriate work clothing and equipment must be provided and maintained by the employer at no cost to the employee. Contaminated clothing or equipment must not be removed from the change room or worn home. Cleaning methods must not allow dispersion of lead into the workroom air.

VI. Housekeeping
This section points out that vacuuming is the preferred method of keeping surfaces as free as practicable of lead dust, and that employers are obligated to establish a housekeeping program sufficient to achieve this goal.

VII. Hygiene Facilities and Practices
The standard requires that change room, showers, and filtered air lunchrooms to be constructed and made available to employees exposed to lead above the PEL. Where providing these facilities would require new construction or substantial renovation, these requirements have been stayed by the U.S. Court of Appeals.

It is also noted that employees exposed above the PEL must use the facilities if they are available. Further, employees exposed above the PEL must not wear home any clothing or equipment worn during the shift. This includes shoes and underwear. If taken home, such clothing should be cleaned carefully so that it does not contaminate the home.

The section stresses the need to properly utilize hygiene facilities and to practice good personal hygiene so as to reduce or eliminate several sources of lead exposure.

VIII. Medical Surveillance

This section outlines OSHA's regulations pertaining to medical surveillance under the lead standard. Such surveillance helps determine if the provisions of the standard have protected employees from harm, and must be provided by the employer without cost to the employees. Medical surveillance includes the requirement for biological monitoring of any employee exposed above the 30 ug/m^3 air monitoring action level for more than 30 days a year. Biological monitoring includes the determination of the concentration of lead in the blood and the concentration of zinc protoporphyrin (ZPP) in the blood. The requirement for providing ZPP tests has been stayed by the U.S. Court of Appeals.

If an employee's confirmed blood lead level is found to be over 40 ug/100 g, the employer must inform the employee in writing of the level within 5 days of receipt of the test results. Also, the employee must be informed if the level requires that the employee be temporarily removed from exposure. During the first year of the standard, the removal criterion is a confirmed blood lead level above 80 ug/100 g.

In addition, the section describes the content of medical examinations required for any employee with a confirmed blood lead level over 40 ug/100 g, consultations for those experiencing symptoms of lead poisoning or breathing difficulties while wearing respirators, follow-up medical examinations after temporary medical removal, pre-assignment medical examinations, annual medical examinations, and the availability of medical advice.

It is pointed out that participation in the medical surveillance program is not mandatory for employees; however, participation is encouraged.

It is noted that the "multiple physician review" requirements of the standard have been stayed by the U.S. Court of Appeals and that at present the employer will generally be the one who selects the physician to conduct medical surveillance under the standard.

The section also describes information which employers must provide to physicians to assist them with medical surveillance, and the written report the physician must prepare after the examination. Also, the section points out the unacceptability of "prophylactic chelation", that is, the practice of using drugs or injections to keep blood lead levels low. It does point out however, that chelation is appropriate to treat lead poisoning cases or to assist in the diagnosis of lead poisoning.

IX. Medical Removal Protection

This section describes the requirements for removal from a regular job without loss of earnings, seniority or other employment rights and benefits. Medical removal protection (MRP) protects employee rights and benefits for a period of

up to 18 months should removal for that long a period be required. This removal can occur if the confirmed blood lead level reaches or exceeds a predetermined level while exposure to lead in air, without a respirator, is at or above a given level. Employees may be returned to their former job status when the blood lead level is reduced to or below a given blood lead level. This schedule for implementation is as follows:

	Removal Blood Lead ug/100 g	Air Lead ug/m^3	Return Blood Lead ug/100 g
At Present	80 and above	100 and above	at or below 60
After March 1, 1980	70 and above	50 and above	at or below 50
After March 1, 1981	60 and above	30 and above	at or below 40
After March 1, 1983	50 and above averaged over 6 months.	30 and above	at or below 40

Removal may also be required based on the opinion of a physician regardless of blood lead level or air lead level, or may be ordered voluntarily by an an employer. Removal does not necessarily mean removal from work but may mean temporary assignment to another job with significantly lower exposure, or a reduction in working hours. Respirators cannot be used as a substitute for removal. MRP benefits are reduced to the extent that the removed worker receives other compensation, and are forfeited entirely if the employee fails to participate in follow-up medical surveillance.

X. Employee Information and Training

This section notes that employers are required to provide an annual information and training program to employees with air lead exposure above 30 ug/m^3 and to those who may suffer skin or eye irritation from lead. The section specifies the employer's responsibilities for making available and/or distributing material and information regarding the standard provided by OSHA.

XI. Signs

This section specifies the signs that must be posted in areas where the PEL is exceeded. This requirement has been stayed by the U.S. Court of Appeals.

XII. Recordkeeping

This section describes the recordkeeping responsibilities of the employer under the standard. It is noted that records concern-in exposure, blood lead levels and results of medical examinations must be retained for 40 years or for 20 years after termination of employment, whichever is longer. MRP records must be retained only for the duration of the employee's employment.

Employees and employees' authorized representatives have the right to see their own exposure monitoring, biological monitoring and MRP records. An employee union also has rights to such records

even if not authorized by the employee. Other personal medical records, however, may only be released to the employee or the designated individual.

XIII. Observations of Monitoring
This section notes that when air monitoring is performed, the employee or a designated person is permitted to observe the procedures, record any observations, and receive results of monitoring.

XIV. Effective Date
This section notes that the effective date of the standard was March 1, 1979.

XV. Additional Information
This section notes that explanatory materials and copies of the Standard can be obtained free of charge by calling or writing the OSHA Office of Publications, Room S-1212, United States Department of Labor, Washington, D.C. 20210.

Appendix C, which is entitled "Medical Surveillance Guidelines," outlines the medical surveillance provisions of the standard for inorganic lead, and provides further information to the physician regarding the examination and evaluation of workers exposed to inorganic lead. The appendix is divided into 4 sections.

I. Medical Surveillance and Monitoring Requirements for Workers Exposed to Inorganic Lead
This section provides a detailed description of the monitoring procedure, including the required frequency of blood testing for exposed workers, medical examinations, provisions for medical removal protection (MRP), the right of the employee to multiple physician review, and notification and recordkeeping requirements of the employer. A discussion of the requirements for respirator use and respirator monitoring and OSHA's position on prophylactic chelation therapy is also included in this section.

II. Adverse Health Effects of Inorganic Lead
This section discusses OSHA's views on the toxic effects and clinical manifestations of lead poisoning, including effects of lead intoxication on enzymatic pathways in heme synthesis, on the nervous system, on the gastrointestinal system, on renal function, and on male and female reproductive capacity and the development of a fetus.

III. Medical Evaluation
This section outlines the recommended medical evaluation of the worker exposed to inorganic lead, including details of the medical history, physical examination, and recommended laboratory tests, which are based on the toxic effects of lead as discussed in Section II.

IV. Laboratory Evaluation

This section provides detailed information concerning the laboratory tests available for monitoring exposed workers. Included also is a discussion of the relative value of each test and the limitations and precautions which are necessary in the interpretation of the laboratory results.