



Industrial Hygiene Program

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1. PURPOSE

To establish a procedure for the implementation and control of an Industrial Hygiene Program for employee protection at all Mosaic Phosphates Florida Locations. The objective of this policy to identify program authority and responsibilities, and establish standard operating procedures for the program components.

2. SCOPE

The Industrial Hygiene Program covers all Mosaic Phosphates Florida facilities where employees or contractors encounter environmental stresses.

3. DEFINITIONS

- 3.1 CIH – Certified Industrial Hygienist who is concerned primarily with the control of environmental stresses or occupational health hazards that arise as a result of or during the hours of work.
- 3.2 Competent Person – A person who, by virtue of his education and experience is capable of identifying existing and predictable hazards or working conditions that are hazardous or dangerous to employees.
- 3.3 Documentation – Written logs, instructions, procedures that formalize activities required to successfully implement the industrial hygiene effort.
- 3.4 Monitoring Plan – a plan for conducting periodic industrial hygiene monitoring of areas known to have the potential for exposure to noise and chemicals exposure.

4. PROCEDURES

4.1 Industrial Hygiene

4.1.1 Health Hazard Recognition

- a. Identify potentially significant workplace health hazards by using a risk assessment procedure that identifies job description exposure groups with chemicals of concern.

- b. The groups should be prioritized for monitoring by the degree of estimated risk presented by the health hazard.
- c. A Monitoring Plan should be maintained based on the matrix.
- d. Consideration is to be given to available information including:
 - i. Known health hazards associated with physical, chemical and biological agents in the workplace.
 - ii. The results of employee medical surveillance and health studies.
 - iii. Employee and other worker health complaints.
 - iv. Industrial hygiene monitoring information.
- e. Ensure the following activities are included in the hazard recognition:
 - i. Plant survey,
 - ii. Chemical inventory,
 - iii. Process and equipment review,
 - iv. Health hazard review procedures, and
 - v. Process change review procedures.

4.1.2 Health Hazard Evaluation

- a. When the need for exposure monitoring has been identified, the monitoring shall be conducted in accordance with an industrial hygiene-sampling plan. Written statistically valid sampling strategies shall be used, where possible, for chemical agents and, when appropriate, for physical and biological agents to assess employee exposure to potentially significant health hazards in the workplace. These strategies include descriptions of the sampling and analytical methodologies used, including quality control requirements.
- b. Employees shall be notified of exposure monitoring results relevant to their own potential exposures.
- c. Determine a monitoring schedule from the Monitoring Plan requirements. Exposures rated very high are monitored first, and those rated low are monitored last or not at all.
- d. Implement the Monitoring Plan prioritized by the degree of risk exposure determined for each job description.
- e. Develop and follow an exposure assessment strategy with equal or greater merit as contained in the American Industrial Hygiene Association (AIHA) publication A Strategy for Occupational Exposure Assessment. The strategy should have the following goals
 - i. To assess potential health risks faced by all workers.
 - ii. To differentiate between acceptable and unacceptable exposures..
 - iii. To control unacceptable exposures.
 - iv. To establish and document a historical record of exposure levels for all workers and to communicate exposure monitoring results to each worker.
 - v. To ensure and demonstrate compliance with governmental and other exposure guidelines.
- f. Ensure the following activities are included in the evaluation: environmental monitoring (area and personal), sample analysis, statistical analysis of data, biological monitoring, records of data, and establishment of criteria for stresses.

4.1.3 Health Hazard Control

- a. Where exposure levels are determined to be unacceptable, measures must be taken to reduce or eliminate the exposure.

- b. Immediate action shall be taken to reduce employee exposures to potentially significant health hazards to levels that comply with governmental requirements and internal limits when it is determined that exposures exceed such requirements and limits. Actions to consider, in priority order:
 - i. Engineering design modifications to further limit potential exposures,
 - ii. Substitution,
 - iii. Appropriate administrative controls, including work practice controls,
 - iv. Use of personal protective equipment, or
 - v. Removal of employees at risk from the work area when adequate protection cannot be provided by other means.
 - c. New or modified facilities and equipment shall be designed to achieve compliance with government regulations and internal requirements. Consideration shall be given to the possibility of achieving the lowest possible employee exposure levels for identified workplace health hazards. Ventilation, isolation, enclosure and substitution shall be considered in all engineering design reviews that involve the use of toxic materials.
- 4.1.4 OSHA Compliance
- a. Recordkeeping
 - i. Industrial hygiene-related documentation must be maintained for at least 30 years.
 - ii. Exposure monitoring records shall be maintained in accordance with government regulations and internal requirements and contain the following information:
 - A. Employee or work areas monitored.
 - B. Conditions such as normal operations, shutdown, emergency situations and type of work.
 - C. Personal protective measures in use.
 - D. Sampling and analytical methodology used.
 - E. Exposure conditions and duration of exposure are measured.
 - F. Applicable governmental requirements and/or internal exposure limits in effect at the time of sampling.
- 4.2 Hearing Conservation
- 4.2.1 A survey of the workplace shall be conducted periodically using sound level meter, to identify potential high noise areas, and/or any changes to equipment, processes, procedures, etc. that may have an impact on noise levels.
 - 4.2.2 Where circumstances, such as high worker mobility, significant variations in sound level, or a significant component of impulse noise, make area monitoring with a sound level meter generally inappropriate, representative personal sampling shall be used to identify potential high noise areas.
 - 4.2.3 Typical job tasks should also be monitored using personal noise dosimeters to establish a valid baseline for the facility. Employees exposed at or above an 8-hour time-weighted-average (TWA 8-hour) of 85 decibels (dBA) shall be notified of the results of this monitoring within 21 days of receiving results.
 - 4.2.4 Noise Control
 - a. New and modified facilities shall be designed to achieve compliance with governmental regulations and internal requirements. Appropriate noise control measures shall be considered during engineering design reviews.



- b. Area and personal monitoring shall be used to determine what areas, processes, or specific jobs may pose a potential hazard to employees from excessive noise exposure.
- c. Areas where employees shall be required to wear hearing protection are defined as:
 - i. Employees entering areas where noise levels are equal to or greater than 90 dBA (instantaneous) shall wear appropriate personal protective equipment and/or adhere to appropriate administrative control procedures to ensure that their exposures do not exceed 90 dBA TWA 8-hour.
 - ii. Employees shall also wear hearing protection in plant areas that are posted for high noise levels, or if employees experience reduced hearing functions that are work related while working in areas where noise is greater than 85 dBA TWA 8-hour.
- d. While employee noise exposures are determined to exceed an 8 hour time weighted average (TWA) sound level of 90 dBA, the Company shall implement:
 - i. Where reasonably practicable, areas with noise levels equal to or greater than 85 dBA shall be isolated, enclosed, or materials substituted to reduce noise levels to the lowest achievable level.
 - ii. "Administrative controls" by imposing limits on employee noise exposure.
- e. "Hearing Protection" devices shall be provided and used by employees exposed to excessive sound levels as an interim measure while engineering or administrative controls are being implemented, or when said controls are determined not to be feasible.
- f. Work areas where noise levels are equal to or greater than 85 dBA 8-hour, except as a result of non-sustained impulse noise, shall be posted with high noise warning signs.

4.2.5 Monitoring

- a. Area and personal monitoring data shall be used to identify employees for inclusion in the hearing conservation program and aid in the selection of hearing protectors.
- b. Monitoring shall be repeated periodically or whenever a change in production, process, equipment, or controls indicates a change in noise exposure.
- c. Employees exposed at or above an 8 hour TWA of 85 dBA shall be notified by the Safety Department.

4.2.6 Audiometric Testing Program

- a. Employees who are exposed to or who are potentially exposed to noise levels in excess of an 8-hour TWA of 85 dBA shall be provided with annual audiometric tests. Audiometric programs are also required at levels lower than 85 dBA when routine work shifts exceed eight (8) hours per day, or more stringent government regulations apply. The Safety Department shall make these determinations.
- b. Annual audiometric tests shall be performed by the Plant Nurse or by a certified Technician for those in the Hearing Conservation program.
- c. The background noise levels of the audiometric test booth shall be checked annually.
- d. The audiometer shall be tested each day prior to employee audiometric testing to ensure its accuracy. The functional operation of the audiometer shall be checked by:
 - i. Testing a person with known, stable hearing thresholds.
 - ii. Testing a mechanical ear with known, stable hearing thresholds, and;

- iii. Comparing the audiogram from the above two tests with their established baseline audiogram. Deviations of 10 decibels or greater will require an acoustic calibration of the audiometer.
 - e. Pre-employment audiograms shall be used to establish a valid baseline audiogram against which subsequent audiograms can be compared.
 - f. Employees shall be notified of the need to avoid high levels of non-occupational noise during the 14 hours preceding the audiometric examinations.
 - g. Employees shall be instructed to use hearing protectors when reporting to work on the day that they have been scheduled for an audiometric examination.
 - h. Employees' annual audiograms shall be compared to their baseline audiogram to determine if a standard threshold shift has occurred. This comparison shall be done by the Nurse or certified Technician.
 - i. If an audiogram indicates that a standard threshold shift has occurred, the employee shall be re-tested within 30 days.
 - j. The Company physician to determine if further evaluation is necessary shall review problem audiograms.
 - k. Employees shall be notified in writing within 21 days when their annual audiogram indicates that a standard threshold shift has occurred.
- 4.2.7 Hearing Protectors
- a. Hearing protectors shall be made available to all employees.
 - b. An assortment of different brands and types of hearing protectors shall be made available for employee selection.
 - c. Hearing protectors shall be worn by any employee who has exhibited a significant standard threshold shift.
- 4.2.8 Access To Information And Training Materials
- a. A copy of the OSHA or MSHA Hearing Conservation standard shall be made available to employees or their representative upon written request.
 - b. A copy of the standard shall be posted on Pipeline.
 - c. Employee requests for copies of the OSHA standard or the Industrial Hygiene Policy shall be referred to the Safety Department.
- 4.2.9 Recordkeeping
- a. Audiometric test records shall be retained in each employee's medical file for the duration of their employment.
 - b. Employee Health Services shall maintain the date of last exhaustive or acoustic calibration of the audiometer.
 - c. Employee Health Services shall maintain records of the measurement of the background sound pressure levels in the audiometric test room.
 - d. Employee noise exposure records shall be made available upon written request of the affected employee or designated representative.
 - e. Noise exposure measurement records shall be retained for two (2) years.
 - f. Training records shall be kept for five (5) years.
- 4.3 Asbestos Containing Materials
- 4.3.1 This procedure applies to all ACM with an asbestos content greater than 1% that may be easily crushed by hand pressure (friable). Additionally, any suspected ACM shall be presumed to contain asbestos unless specific information, data, or analysis is available to indicate that the material does not contain asbestos. Suspected ACM may include floor tiles, roofing materials, gaskets, seals, packing, insulation, cement asbestos siding, etc.

- 4.3.2 General
 - a. The Safety and Environmental Departments shall be contacted prior to the disturbance or removal of any known or suspected ACM.
 - b. Employees shall not intentionally remove or handle material. Work in the area shall cease immediately, the area barricaded, and the Safety and Environmental Departments notified when ACM is encountered or suspected.
 - c. A qualified, licensed ACM removal contractor shall perform all removal of ACM.
- 4.3.3 ACM Surveys
 - a. Environmental shall be responsible for obtaining ACM surveys for all locations. Acme surveys shall be conducted under the direction of a Licensed Asbestos Consultant.
 - b. Copies shall be made available to employees for viewing upon request.
- 4.3.4 Recordkeeping
 - a. The Environmental Department shall create a record that identifies the kinds of asbestos containing materials in the building and their locations.
 - b. Copies of waste manifests and other landfill disposal records shall be maintained for the duration of ownership of the facility.
 - c. Safety Training shall be responsible for maintaining records of employee awareness training.
 - d. Records of all employees training shall be maintained for one (1) year beyond the last date of employment by that employee.
- 4.4 Lead and Lead Based Paint
 - 4.4.1 General
 - a. The Safety and Environmental Departments shall be contacted prior to the disturbance or removal of any known or suspected lead or lead based paint (LBP).
 - b. Employees shall not intentionally remove or handle material. Work in the area shall cease immediately, the area barricaded, and the Safety and Environmental Departments notified when lead or LBP is encountered.
 - 4.4.2 Operations that generate lead dust and fume include the following:
 - a. Flame-torch cutting, welding, the use of heat guns, sanding, scraping and grinding of lead painted surfaces in repair, reconstruction, dismantling, and demolition work;
 - b. Abrasive blasting of structures containing lead-based paints;
 - c. Use of torches and heat guns, and sanding, scraping, and grinding lead-based paint surfaces during remodeling or abating lead-based paint; and
 - d. Maintaining process equipment or exhaust ductwork.
 - 4.4.3 The most effective way to protect workers is to minimize exposure through the use of engineering controls and good work practices. Respirators are not to be used in lieu of engineering and work practices to reduce employee exposures to below the PEL. Respirators can only be used in combination with engineering controls and work practices to control employee exposures.
 - a. Limit worker exposures to 50 micrograms of lead per cubic meter of air averaged over an eight-hour workday.
 - b. If an employee is exposed to lead for more than 8 hours in any work day, the permissible exposure limit, as a time weighted average (TWA) for that day, shall be reduced according to the following formula: Maximum permissible limit (in $\mu\text{g}/\text{m}^3$)=400 divided by hours worked in the day.
 - c. Within 5 working days after the receipt of monitoring results, the employer shall notify each employee in writing of the results that represent that employee's exposure.

- 4.4.4 At the minimum, the following elements should be included in the employer's worker protection program for employees exposed to lead:
- a. Hazard determination, including exposure assessment;
 - b. Engineering and work practice controls;
 - c. Respiratory protection;
 - d. Protective clothing and equipment;
 - e. Housekeeping;
 - f. Hygiene facilities and practices;
 - g. Medical surveillance and provisions for medical removal;
 - h. Training;
 - i. Signs; and
 - j. Recordkeeping.
- 4.4.5 Engineering Controls
- a. Engineering controls and good work practices must be used where feasible to minimize employee exposure to lead.
 - b. Exposures must not exceed the OSHA interim final PEL of 50 micrograms per cubic meter of air (50 ug/m³) averaged over an 8-hour-period.
 - c. When feasible engineering controls and work practice controls cannot reduce worker exposure to lead to at or below 50 ug/m³, respirators must be used to supplement the use of engineering and work practice controls.
 - d. A Competent Person should review all site operations and stipulate the specific engineering controls and work practices designed to reduce worker exposure to lead. Engineering measures include local and general exhaust ventilation, process and equipment modification, material substitution, component replacement, and isolation or automation.
 - e. Examples of recommended engineering controls that can be used to reduce worker exposure to lead are as follows.
- 4.4.6 Housekeeping and Personal Hygiene Practices
- a. A rigorous housekeeping program and adherence to basic personal hygiene practices will minimize employee exposure to lead. These two elements of the worker protection program will help to prevent taking lead- contaminated dust out of the worksite and home to the workers' families, thus ensuring that the duration of lead exposure does not extend beyond the work shift and providing added protection to employees and their families.
 - b. Housekeeping
 - i. Daily removal of accumulations of lead dust and lead-containing debris.
 - ii. Vacuum lead dust with high-efficiency particulate air (HEPA)- filtered equipment
 - iii. Such cleaning operations should be conducted, whenever possible, at the end of the day, after normal operations cease.
 - iv. All persons doing the cleanup should be provided with suitable respiratory protection and personal protective clothing to prevent contact with lead.
 - v. Collect and put into sealed impermeable bags or other closed impermeable containers. Bags and containers should be appropriately labeled as lead-containing waste.
 - c. Personal Hygiene Practices
 - i. Provide and ensure that workers use washing facilities. Clean change areas, and separate non-contaminated eating areas must also be provided. Change Areas: The employer must provide a clean change area equipped with storage

facilities for street clothes and a separate area with facilities for the removal and storage of lead-contaminated protective work clothing and equipment. This separation is essential in preventing cross contamination of the employee's clothing.

- ii. Work clothing must not be worn away from the job site. Under no circumstances shall lead-contaminated work clothes be laundered at home or taken from the worksite, except to be laundered professionally or properly disposed of following applicable Federal, state, and local regulations.
- iii. When there is potential for extensive contamination of the employees' skin, hair, and protective clothing, shower facilities must be provided if feasible so that exposed employees can wash lead from their skin and hair prior to leaving the worksite.
- iv. The employer must ensure that employees who work with lead either clean or remove their protective clothing and wash their hands and face prior to eating, drinking, smoking or applying cosmetics and that these latter practices are never permitted while in the work area or in areas subject to the accumulation of lead. HEPA vacuuming can be used to remove loose contamination from the work clothing prior to eating.
- v. Adequate washing facilities shall be provided for employees. Such facilities shall be in near proximity to the worksite and provided with water, soap, and clean towels to enable employees to remove lead contamination from their skin.
- vi. Contaminated water from washing facilities and showers must be disposed of in accordance with applicable local, state, or federal regulations.

4.4.7 Protective Clothing

- a. caused by a number of interacting factors, including: At no cost to employees, provide workers who are exposed to lead above the PEL and for whom the possibility of skin contamination or skin or eye irritation exist, clean, dry protective work clothing and equipment. Appropriate changing facilities must also be provided. Appropriate protective work clothing and equipment used on construction sites can include: coveralls or other full-body work clothing; gloves; vented goggles or face shields with protective spectacles or goggles; and welding or blasting helmets, when required.
- b. Disposable coveralls and separate shoe covers may be used, if appropriate, to avoid the need for laundering. Non-disposable coveralls shall be replaced daily. If an employee leaves the work area wearing protective clothing, the clothing should be cleaned with high-efficiency particulate air (HEPA) filter vacuum equipment to remove loose particle contamination; or as an alternative, the coveralls should be removed. Before respirators are removed, HEPA vacuuming or other suitable method, such as damp wiping, shall be used to remove loose particle contamination on the respirator and at the face-mask seal. Use work garments of appropriate size, and use duct tape to reinforce their seams (e.g., underarm, crotch, and back).
- c. Contaminated clothing that is to be cleaned, laundered or disposed of shall be placed in closed containers. Containers shall be labeled with the following warning:
- d. **CAUTION: Clothing contaminated with lead. Do not remove dust by blowing or shaking. Dispose of lead- contaminated wash water in accordance with applicable local, state, or federal regulations.**
- e. Persons responsible for handling contaminated clothing shall be informed of the potential hazard in writing. At no time shall lead be removed from protective clothing or equipment by any means that disperses lead into the work area, such as brushing, shaking, or blowing.
- f. At no time shall workers be allowed to leave the worksite wearing lead contaminated clothing or equipment, e.g. shoes, coveralls, or head gear.

- g. Heat stress: Workers wearing protective clothing can face a risk from heat stress. Additionally, heat stress may be an important concern when working in a hot environment or within containment structures. Heat stress is environmental conditions, type of protective clothing worn, the work activity required, and the individual characteristics of the employee.
 - h. In situations where heat stress is a concern, employers should use appropriate work/rest regimens and provide heat stress monitoring that includes measuring employee's heart rates, body temperatures, and weight loss.
- 4.4.8 Respiratory Protection For Lead Exposure
- a. Must often be used to supplement engineering controls and work practices whenever these controls are technologically incapable of reducing worker exposures to lead to or below 50 ug/m(3).
 - b. Don before entering the work area and remove after leaving the area, or as part of a decontamination procedure. Employers must perform either qualitative or quantitative fit tests for each employee wearing negative pressure respirators.
 - c. Fit testing is to be performed at the time of the initial fitting and at least semiannually thereafter.
 - d. NIOSH type CE respirators are required for use by abrasive blasting operators. Currently, NIOSH certifies both continuous flow and positive pressure respirators for abrasive blasting operations. Continuous-flow respirators are recommended by NIOSH only for airborne concentrations less than or equal to 25 times the OSHA PEL of 50 ug/m(3). Positive pressure respirators are recommended by NIOSH for airborne concentrations less than 2,000 times the OSHA PEL (50 ug/m(3)).
 - e. Refer to Respiratory Protection Program for additional information.
- 4.4.9 Medical Surveillance
- a. Employees exposed to lead at or above the action level of 30 ug/m(3) on any one day in a calendar year must be provided initial medical surveillance consisting of biological monitoring in the form of blood sampling and analysis for lead and zinc protoporphyrin levels.
 - b. Full medical surveillance is to be provided to employees exposed to lead at or above the action level for more than 30 days per year. All medical examinations and consultations shall be performed by or under the direct supervision of a qualified physician and shall be provided to employees at no cost, without loss of pay, and at a reasonable time and place. A qualified physician is a doctor of medicine (M.D.) or osteopathy (D.O.) familiar with the objectives and requirements of a medical surveillance program for lead exposure.
 - c. The following conditions necessitate an immediate medical consultation including, as determined by the qualified physician, a physical examination and a blood sample for lead analysis (biological monitoring):
 - i. Whenever a worker develops signs or symptoms associated with lead toxicity; and
 - ii. Before a worker restarts work following medical removal.
- 4.4.10 Biological Monitoring
- a. Blood lead and zinc protoporphyrin (ZPP) or free erythrocyte protoporphyrin (FEP) shall be monitored for those workers exposed to lead. In general, workers in high-risk occupations should be monitored as often as needed to prevent adverse health effects.
 - b. Analysis of blood samples shall be conducted by a laboratory currently approved by OSHA.
- 4.4.11 Reproductive Hazard Issues

- a. Workers who are actively seeking to have a child or who are pregnant should contact qualified medical personnel to arrange for a job evaluation and medical follow-up.
- b. Employees with concerns about reproductive issues should be referred to qualified medical personnel.

4.4.12 Written Medical Opinion

- a. A written signed opinion from the examining physician for each medical examination performed for each employee must be obtained. This opinion should contain the results of the medical examination as they relate to occupational exposure to lead and must include:
 - i. Whether the employee has any detected medical condition which would place his/her health at increased risk from lead exposure;
 - ii. Any special protective measures or limitations on worker's exposure to lead;
 - iii. Any limitation on respirator use;
 - iv. Results of blood lead determination; and
 - v. A statement that the employee has been informed by the physician of the results of the consultation or medical examination and any medical condition that may require further examination or treatment.
 - vi. Findings of lab results or diagnoses unrelated to the workers' exposure to lead must not be communicated to the employer or included in a written opinion.
- b. Employees should be advised by each physician of any medical condition, occupational or non-occupational, which necessitates further medical evaluation or treatment. The employer should furnish the employee with a copy of the written medical opinion.

4.4.13 Medical Removal

- a. When employees are removed, or otherwise limited, they must be placed in jobs that will not result in exposure to lead at or above the action level of 30 ug/m(3). The employee may return their former job status when a qualified physician's medical determination is that the employee is no longer at risk from exposure to lead or when the employee's blood lead level drops below 40 ug/dl.
- b. In the case of medical removal, records must include the following information:
 - i. Name and social security number of the worker;
 - ii. Date of each occasion that the worker was removed from current exposure to lead;
 - iii. Date on which the worker was returned to his or her former job status; a brief explanation of how each removal was or is being accomplished; and
 - iv. Statement indicating whether or not the reason for the removal was an elevated blood lead level.
 - v. Maintain this record for at least the duration of any worker's employment.

4.4.14 Recordkeeping

- a. Maintain any employee exposure and medical records to document ongoing employee exposure, medical monitoring and medical removal of workers. This data provides a base to properly evaluate the employee's health.
- b. Exposure monitoring records shall include at least:
 - i. Date(s), number, duration, location and results of each of the samples taken.
 - ii. Description of the sampling procedure used to determine representative employee exposure where applicable.

- iii. Description of the sampling and analytical methods used and evidence of their accuracy;
- c. Facilities covered by OSHA must properly record cases on their OSHA form 300 when the worker has:
 - i. A blood lead level that exceeds 50 mg/dl;
 - ii. Symptoms of lead poisoning, such as colic, nerve damage, renal damage, anemia, or gum problems; or * receives medical treatment to lower blood lead levels or for lead poisoning.
- d. Employees, former employees, designated representatives, and OSHA must be provided access to exposure and medical records in accordance with 29 CFR 1910.20.

4.5 Radiation

4.5.1 General

- a. Radiation doses shall be kept as low as reasonably achievable (ALARA) by:
 - i. Control of radiation outside of the body.
 - ii. Control of radioactivity that is taken into the body.
 - iii. Control of the spread of radioactivity.
- b. The yellow and purple radiation symbol shall be used for radioactive materials, radiation areas or contamination control areas that require labeling by regulatory standards. The radiation symbol shall not be used on items not needing such labels.
- c. Area boundaries shall be set by walls, tape, fences, rope, signs or other barriers with appropriate warning indicators, signs or postings attached or visible.
- d. Radiation control barriers shall not be removed without the approval of facility Radiation Safety Officer or designee.
- e. Only radiation safety trained and authorized personnel may work with radioactive materials or enter radiation or contamination control areas.
- f. Materials and equipment shall be surveyed by Radiation Safety Officer or designee prior to removal from a contamination control area.
- g. Good hygiene and housekeeping practices shall be followed.
- h. Personnel assigned personnel monitoring devices shall wear their monitoring devices at chest or neck level or as required by the device and return it to a secure location when leaving the plant.
- i. Personnel monitoring devices that are lost or worn during medical or dental x-rays shall be reported to Radiation Safety Officer.
- j. Personnel shall submit bioassay samples as scheduled or when requested by Radiation Safety Officer.
- k. Tampering with radiation monitors, personnel monitoring equipment, bioassay samples, log books, respirators, etc., is strictly prohibited.
- l. Suspected inhalation or ingestion of contaminated materials, overexposure to radiation, contamination of clean areas or equipment, etc., shall be reported to your supervisor or the Radiation Safety Officer immediately.
- m. Radiation safety shall be considered when issuing Safe Work and Confined Space Entry Permits.

4.5.2 Nuclear Gauges

- a. The shields shall not be modified or the source removed from the shield.

- b. Gauges shall be removed or moved only under the direction of authorized personnel having training in handling of Nuclear Gauges or the Radiation Safety Officer.
- c. The Radiation Work Permit shall be used to document the movement of a Nuclear gauge for installations and removals from service or placement in storage.
- d. The nuclear source handling JSHA and radiation protection manual shall be followed whenever moving nuclear gauges or entering vessels equipped with nuclear sources.

4.5.3 NORM (Naturally Occurring Radioactive Material)

- a. Rock and Phos Acid Facilities
 - i. The Rock Tunnel fans shall be kept running at all times to keep radon levels low.
 - ii. Filter pans, filtrate lines, receiver tanks, and related equipment which may have build up of a high activity level shall be surveyed before being repaired or released to an outside repair facility.
 - iii. Filter cloths, filter pan parts, scale, etc. shall be disposed of in the gypsum stack area In accordance with the facility Phosphogypsum stack permit
 - iv. Respiratory protection is required when abrasive blasting, , grinding, welding, etc. on filter pans or other equipment with build up of a high activity level.
- b. Fabrication Shops
 - i. Personnel working on filter pans in the controlled area shall be trained in radiation and respiratory protection.
 - ii. .Waste and scrap generated from filter pan repair shall be disposed of in a gypsum stack. In accordance with the facility Phosphogypsum stack permit
 - iii. The controlled area may be released by the Radiation safety Officer or designee for normal access between repair jobs.

4.6 Ergonomics

- 4.6.1 Potential ergonomic hazards in the workplace shall be identified and analyzed when appropriate. This may include scrutiny and tracking of injury and illness records to identify patterns of traumas or strains that may suggest development of cumulative trauma disorders and/or repetitive motion injuries.
- 4.6.2 Basic principles of ergonomics and human factors engineering are incorporated into the design of new facilities, processes, work areas, and job tasks. Capital and project reviews identify ergonomic hazards so that design changes and appropriate equipment can be purchased.
- 4.6.3 Ergonomic hazards are primarily prevented by effective design of workstations, tools and jobs. This shall be accomplished by designing or modifying the workstations, tools, and work methods to eliminate excessive exertion and awkward postures and to reduce repetitive motion.
- 4.6.4 Specially trained health care providers, and appropriate treatment shall evaluate employees with musculoskeletal disorders and follow-up is provided. Employees shall be monitored until they can perform work without restrictions.
- 4.6.5 Ergonomic assessments shall be retained for as long as the job or task exists at the facility.

5. TRAINING

5.1 Industrial Hygiene

- 5.1.1 Training shall be provided on employee participation in exposure monitoring campaigns as necessary. The training shall include:

- a. The participation is part of the job.
 - b. Requirement to protect and examine for operation the monitoring device periodically throughout the monitoring period and report any malfunctions to their supervisor or the sampling personnel.
 - c. The right of the employee to have access to monitoring data within a timely period following completion of the survey.
 - d. The right of the employee to observe exposure sampling. In addition the purpose of the sampling, how the sampler works, and the chemical or physical name of the stressor being measured.
- 5.2 Hearing Conservation
- 5.2.1 Training shall be provided during the annual audiometric tests for all employees included in the Hearing Conservation Program. The training shall include:
- a. The effects of noise on hearing.
 - b. The purpose of hearing protectors and instruction on the selection, fitting, use, and care of hearing protectors.
 - c. The purpose of audiometric testing, and an explanation of the test procedures.
 - d. The proper use and care of hearing protectors.
- 5.3 Asbestos
- 5.3.1 Safety Training shall be responsible for scheduling ACM awareness training for employees. The training shall include
- a. Asbestos containing material (ACM) identification
 - b. Health Hazards associated with asbestos exposure or improper handling
 - c. Requirements to inform supervision or the Environmental and Safety Departments should damaged ACM be found.
 - d. Vendors and contractors providing services that could potentially disturb ACM shall provide documentation that their employees have received AcM awareness training.
- 5.4 Lead
- 5.4.1 For the workplace in which there is a potential exposure to airborne lead at any level inform employees of the content of Appendices A and B of the OSHA Lead regulation 29 CFR 1910.1025.
- 5.4.2 Safety Training shall initiate an annual training program for employees who are subject to exposure to lead at or above the action level. The training shall Inform employees of the following:
- a. The content of this standard and its appendices;
 - b. The specific nature of the operations which could result in exposure to lead above the action level;
 - c. The purpose, proper selection, fitting, use, and limitations of respirators;
 - d. The purpose and a description of the medical surveillance program, and the medical removal protection program including information concerning the adverse health effects associated with excessive exposure to lead (with particular attention to the adverse reproductive effects on both males and females);
 - e. The engineering controls and work practices associated with the employee's job assignment;
 - f. The contents of any compliance plan in effect; and
 - g. Instructions to employees that chelating agents should not routinely be used to remove lead from their bodies and should not be used at all except under the direction of a licensed physician;



5.5 Radiation

- 5.5.1 Awareness training shall be provided annually and shall include: the hazards of radiation and signage identifying radiation-producing devices.
- 5.5.2 Employees who handle radioactive producing devices or wear personal radiation dosimetry devices shall be trained by personnel approved by the Radiation Safety Officer.

5.6 Ergonomics

- 5.6.1 Employees shall be periodically instructed on ergonomic hazards. This includes information on the variety of cumulative trauma disorders, what risk factors cause and/or contribute to them, how to recognize and report symptoms, and how to prevent these disorders.

6. PROGRAM REVIEW/PERIODIC INSPECTIONS

- 6.1 The Industrial Hygiene Policy shall be reviewed at least every seven years by Safety and Environmental Department representatives.

7. CONTRACTORS

- 7.1 All contractors performing work at company facilities or work on equipment from company facilities shall be subject to this policy.
- 7.2 ACM Contractors
 - 7.2.1 Contractors shall notify the Florida Department of Environmental Protection (FDEP) in accordance with the requirements of 40CFR61.145. The applicable maintenance or engineering department representative shall provide Environmental Services with a copy of the notification prior to the start of any disturbance activities.
 - 7.2.2 If the facility will be disposing more than 260 feet of pipe insulation, or 160 square feet of ceiling or wall insulation, the facility must provide the State EPA with the following additional information regarding the disposal of the asbestos material:
 - a. Description and schedule of renovation/demolition activities; and
 - b. Asbestos removal procedure.
 - i. The facility shall ensure that all asbestos waste is properly packaged and labeled before being shipped from the facility.
 - ii. The facility shall verify that the waste hauler and disposal site are properly licensed in accordance with Federal, State or Provincial laws to transport and/or landfill asbestos waste.
 - 7.2.3 ACM removal contractors shall submit a report to Environmental Services within 14 days of project completion. Interim reports may be required on large projects when requested by Environmental Services. Environmental Services shall be responsible for the archiving of these reports. Reports shall include:
 - a. A cover letter including description of the work performed, scope work, and a statement affirming compliance with OSHA and FDEP regulations
 - b. Results of any tests or samples taken.
 - c. Copy of ACM contractor license.
 - d. Copy of FDEP notice.
 - e. Landfill receipts.
 - f. List of all employees performing work on the job.

8. REFERENCES

- 8.1 Industrial Hygiene
 - 8.1.1 Applicable U.S. Standards



- a. OSHA 29 CFR 1910.1000 (Air Contaminants)
- b. MSHA 30 CFR 56/57.5001-.5005 (Air Quality, Radiation, & Physical Agents)
- 8.2 Hearing Conservation
 - 8.2.1 Mosaic Phosphate Hearing Conservation Program
 - 8.2.2 Applicable U.S. Standards
 - a. OSHA 29 CFR 1910.95 (Noise)
 - b. MSHA 30 CFR 56/57.5050 (Exposure Limits for Noise)
- 8.3 Asbestos
 - 8.3.1 Mosaic Corporate Standard for Asbestos
 - 8.3.2 Applicable US Standards
 - a. 29 CFR 1910.1101 (OSHA, General Industry, Asbestos)
 - b. 29 CFR 1926.1101 (OSHA, Construction, Asbestos)
 - c. 30 CFR 56, Subpart D (MSHA, Surface Mines)
 - d. 30 CFR 56/57.5001(b) (Exposure Limits For Airborne Contaminants)
 - e. 30 CFR 57, Subpart D (MSHA, Underground Mines)
 - f. 40 CFR 302.4 (EPA, CERCLA)
 - g. 40 CFR 372 (EPA, SARA, Form R)
 - h. 40 CFR 61, Parts A and B (EPA, NESHAP)
 - i. 40 CFR 61.145-156 (EPA, CAA, Waste Disposal and Processing)
 - j. 40 CFR 763 Subpart G (EPA, TSCA, Worker Protection Rule, AHERA)
 - k. 49 CFR 172.101 (DOT, Asbestos, Labeling and Shipping)
 - l. 49 CFR 172.216 (DOT, Asbestos, Packaging)
- 8.4 Lead
 - 8.4.1 Mosaic Phosphates Lead Containing Materials Program
 - 8.4.2 Applicable US Standards
 - a. 29 CFR 1910.1025
 - b. 29 CFR 1926.20
 - c. 29 CFR 1926.62(e)
- 8.5 Radiation
 - 8.5.1 Applicable US Standards
 - a. Space Reserved

9. REVISION LOG

Revision Log				
Rev. No.	Requested By	Approved By	Revised By	Rev. Date
0	Initial Issue	S&H Dept.	Task Team	Dec. 2004
1	Logo Change	Safety and Health	J. Marshall	10/25/06
2	Initial issue for Mosaic	Safety and Health	D. Allen	8/16/07
3	Environmental	Safety and Health	J. Upton	10/01/08
3	Reformat fo ISO		D. Allen	9/16/2011
4	Review Cycle	Dir Phosphate Safety	SME	12/9/2015
5	Review Cycle	PMO	PMO	11/14/2023