

PROPERTY OWNER: Martin Marietta

1503 LBJ Freeway, Suite 400 Dallas, Texas 75234

PROPERTY DESCRIPTION: Batch Plant Operation - 2005 S. McDonald Street, McKinney Texas.

BUILDING OFFICIAL NOTICE (SECTION 116.3 2015 INTERNATIONAL BUILDING CODE)

You are hereby notified that an onsite investigation was conducted by the City of McKinney environmental inspector on July 19, 2019 to determine the extent of the cement dust that was emitted into the air at approximately 11:30 pm on July 18, 2019. The content of this cement dust and its effect on the environment and surrounding properties is not known at this time. After consulting with our enforcement team, I have determined that it is in the best interest of the citizens of McKinney to hereby suspend your Certificate of Occupancy as allowed under the City of McKinney Code of Ordinances, referencing the adoption of the 2015 International Building Code, Section 111.4 Revocation. *The building official is authorized to, in writing, suspend or revoke a certificate of occupancy or completion issued under the provisions of this code wherever the certificate is issued in error, or on the basis of incorrect information supplied, or where it is determined that the building or structure or portion thereof is in violation of any ordinance or regulation or any of the provisions of this code.*

VIOLATION – SECTION 116 UNSAFE STRUCTURES AND EQUIPMENT – 116.1 Conditions. *Structures or existing equipment that are or hereafter become unsafe, insanitary or deficient because of inadequate means of egress facilities, inadequate light and ventilation, or that constitute a fire hazard, or are otherwise dangerous to human life or the public welfare, or that involve illegal or improper occupancy or inadequate maintenance, shall be deemed an unsafe condition.*

BUILDING OFFICIAL ORDER (SECTION 116.3 2015 INTERNATIONAL BUILDING CODE):

You are hereby ordered to discontinue operations until you have addressed the following concerns and received a subsequent notice that your Certificate of Occupancy is removed from suspension by this notice –

1. What, specifically, was released into the air? Please provide the corresponding MSDS sheet(s).
2. How long was the substance released into the air and at what quantity?
3. What measures are being put in place to ensure an incident like this does not occur again?
4. What measures are being taken in place to clean up all of the impacted areas?
5. What measures are being taken to address the health concerns of impacted individuals?

REVISED - Failure to comply with this Notice and Order before the end of day August 15, 2019, may result in further action by the City as provided by state law and City Code of Ordinances and as described below –

[Section 4.](#) *Unless another penalty is expressly provided, every person convicted of a violation of any provision of the Code or any ordinance, rule or regulation adopted or issued in pursuance thereof shall be punished by a fine not exceeding \$500.00; however, a fine for violation of provisions of such code or ordinance sections that govern fire safety, zoning, or public health and sanitation, including dumping of refuse, may not exceed \$2,000.00. Each act of violation and each day upon which any such violation shall continue or occur shall constitute a separate offense. The penalty provided by this section, unless another penalty is expressly provided, shall apply to the amendment of any Code section, whether or not such penalty is reenacted in the amendatory ordinance. In addition to the penalty prescribed above, the city may pursue other remedies such as abatement of nuisances, injunctive relief and revocation of licenses or permits.*

Rick Herzberger, Chief Building Official
City of McKinney Texas 972 547 7453

CITY OF MCKINNEY, TEXAS - Building Inspection Department
221 N. Tennessee Street, McKinney Texas 75070
DATE - August 30, 2019

PROPERTY OWNER: Martin Marietta
1503 LBJ Freeway, Suite 400 Dallas, Texas 75234

PROPERTY DESCRIPTION: Batch Plant Operation
ADDRESS: 2005 S. McDonald Street, McKinney Texas.

**BUILDING OFFICIAL NOTICE (SECTION 116.3 of the ADOPTED 2015
INTERNATIONAL BUILDING CODE)**

After reviewing your response, dated August 15, 2019, to the Building Official Order, dated July 30, 2019, and, after consulting with our enforcement team, I have determined that you have complied with the order. Accordingly, I hereby re-activate your Certificate of Occupancy, as allowed under the City of McKinney Code of Ordinances, referencing the adoption of the 2015 International Building Code, Section 111.4 Revocation. *The building official is authorized to, in writing, suspend or revoke a certificate of occupancy or completion issued under the provisions of this code wherever the certificate is issued in error, or on the basis of incorrect information supplied, or where it is determined that the building or structure or portion thereof is in violation of any ordinance or regulation or any of the provisions of this code.*

I also acknowledge that you are continuing to address the issues that may need further remediation to verify that the plant will meet all applicable criteria and that all shutdown systems are fully functional. My request, as part of this Notice, is to let me know at least 3 business days before intended plant re-start.

Rick Herzberger, Chief Building Official
City of McKinney Texas 972 547 7453

CITY OF MCKINNEY, TEXAS - Building Inspection Department
221 N. Tennessee Street, McKinney Texas 75070
DATE - August 30, 2019

PROPERTY OWNER: Martin Marietta
1503 LBJ Freeway, Suite 400 Dallas, Texas 75234

PROPERTY DESCRIPTION: Batch Plant Operation
ADDRESS: 2005 S. McDonald Street, McKinney Texas.

**BUILDING OFFICIAL NOTICE (SECTION 116.3 of the ADOPTED 2015
INTERNATIONAL BUILDING CODE)**

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I also acknowledge that you are continuing to address the issues that may need further remediation to verify that the plant will meet all applicable criteria and that all shutdown systems are fully functional. My request, as part of this Notice, is to let me know at least 3 business days before intended plant re-start.

Rick Herzberger, Chief Building Official
City of McKinney Texas 972 547 7453



August 15, 2019

Rick Herzberger
Chief Building Official
City of McKinney, Texas
221 N. Tennessee St.
McKinney, TX 75070

Re: Batch Plant Operation – 2005 S. McDonald Street, McKinney, Texas

Dear Mr. Herzberger:

I write on behalf of the property owner, Martin Marietta, in response to the Building Official Notice you posted on our McKinney Batch Plant on July 30, 2019. Specifically, I write to answer the five questions you posed in your notice. The questions, and Martin Marietta's answers, are as follows:

- 1. What, specifically, was released into the air? Please provide the corresponding MSDS sheet(s).**

The release consisted of Portland Cement. The MSDS sheet for the Portland Cement is enclosed herewith.

- 2. How long was the substance released into the air and at what quantity?**

The release lasted approximately 5 hours and 15 minutes until the cement transfer system blower motor was manually shut down by a Martin Marietta employee at approximately 1:30 a.m. on July 19th. The employee shut the system down by pressing a large red "stop" button on the outside of the electrical panel that supplies power to the blower motor. The McKinney Fire Department responded to the incident at approximately 11:50 p.m. on July 18th, but the Fire Department did not shut the system down.

Although Martin Marietta continues to investigate the incident, its current best estimate is that not more than 3-4 tons of cement dust were released, and much of that settled on Martin Marietta's property and did not leave it.

- 3. What measures are being put in place to ensure an incident like this does not occur again?**

The plant has been shut down since July 19th so Martin Marietta could focus on investigating what happened, remediating the release, and ensuring that the release did not occur again. It will remain closed until such time as the issues can be remediated and Martin Marietta can verify that the plant meets all applicable criteria and that all shutdown systems are fully functional. Martin Marietta will be happy to give the City advance notice of any intention to restart the plant.

[North Texas Ready Mix](#)

1503 LBJ Freeway, Suite 400 Dallas TX 75234

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www.martinmarietta.com

In normal operations the plant has an automatic shutoff system known generically as a “bindicator,” that shuts down filling of the silo at issue when it is near full. The bindicator is a fully automatic shutdown system used throughout the industry and does not require manual assistance, but it failed in this instance. Martin Marietta hired a forensic electrical engineer to determine the cause of the bindicator failure. The investigation to date indicates that a new batch panel used to batch and load concrete into trucks was installed at the plant on July 11th and 12th. In the course of that installation, it appears that the wiring of the bindicator circuit was compromised. Normally, the bindicator circuitry is fully independent from the batch panel and does not run through it. Accordingly, neither the panel manufacturer nor company staff realized that the bindicator circuitry could be compromised, and the bindicator failed after installation of the new batch panel.

4. What measures are being taken to clean up all of the impacted areas?

After shutting the plant down, on July 19, 2019 Martin Marietta immediately assembled a community response team of three employees to assess neighborhood impact. These employees began canvassing the McKinney Greens neighborhood on the afternoon of July 19th, prioritizing impact areas and immediate needs. On Saturday morning, July 20th, Martin Marietta dispatched 36 employees to further assess, document, and liaison with residents. Clean-up resources were identified and deployed for immediate needs, and the team implemented a clean-up plan and a communications plan to respond to neighbors’ concerns. A company contact and email were immediately provided to neighbors, including the HOA, to help streamline neighbors’ inquiries. A hotline number and email address were established shortly thereafter to further streamline neighbors’ inquiries and the scheduling of services.

Clean-up resources were identified and deployed as follows: 1) interior cleaning services; 2) exterior cleaning services, including power washes; 3) street cleaning services, including street sweepers with water and vacuums; 4) duct cleaning services; 5) swimming pool cleaning services; and 6) car wash services, provided by handing out vouchers to a nearby car wash. Team members canvassed the neighborhood multiple times during the following week, talking to neighbors and leaving information on doors regarding clean-up resources. Employees manning the hotline number and e-mail address coordinated the scheduling of clean-up services contracted by Martin Marietta. In the case of exterior and interior cleaning, multiple service providers were deployed to speed clean-up, and another contractor swept, washed down, and vacuumed neighborhood streets.

As of last week, team members had handed out approximately 425 vouchers for car washes, completed 77 home interior cleanings, 84 home exterior cleanings, and 80 sets of duct work cleaning. Additional services have been scheduled as the company continues to work through clean-up efforts for the neighborhood.

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5. **What measures are being taken to address the health concerns of impacted individuals?**

TCEQ responded to inquiries by stating that the primary issue in a one-time release of this type is dermal contact and stated that this event should not lead to long term health effects. Martin Marietta concurs. The immediate and significant clean-up resources that Martin Marietta devoted to the incident addressed the issue of dust on surfaces to minimize dermal contact and ensure that any cement exposure individuals faced was limited.

At the request of the McKinney ISD, Martin Marietta also retained a qualified environmental hygienist to inspect Malvern Elementary School on August 12th, 2019. The inspection found no evidence of any dust, cement or otherwise, that would be a cause for concern or require remediation. The inspector also took air samples throughout the school and found the air quality consistent with what would be expected in that environment. The report of inspection is enclosed.

The material released, Portland Cement, is an ingredient in concrete, and is one of the most widely used materials in the construction industry. Applications include concrete floors, footers, sidewalks, walls, and pavement; concrete blocks; and different mixtures of mortar and grout. Portland Cement is readily available in bags at local building supply stores and is used for do it yourself homeowner projects and contractor remodeling projects every day.

Martin Marietta provides this information in the spirit of cooperation and neighborliness. This response is sent as a matter of courtesy and is not an acknowledgement that the notice of violation is legally valid. Accordingly, among other things, Martin Marietta's responses are not and should not be seen as a concession or admission that the international building code sections referenced in your notice are applicable to this situation. Moreover, as you know, Martin Marietta is working with the state TCEQ to investigate the incident. Martin Marietta's responses also should not be seen as a concession or admission that the City of McKinney's environmental inspector has any jurisdictional authority to investigate this matter.

Please let us know if you have any questions, or wish to discuss this matter further.

Very Truly Yours,



Derek S. Gordon
Vice President/General Manager– Ready Mix
North Texas

[North Texas Ready Mix](#)

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SAFETY DATA SHEET (SDS): PORTLAND CEMENT

SECTION I – IDENTIFICATION

PRODUCT IDENTIFIER Portland Cement	TRADE NAME Portland Cement	OTHER SYNONYMS Hydraulic Cement (Type I, II, I/II, III, IIA, V Low Alkali, Plastic, Block, Rapid, Oil Well, White, Class A and Class C), Cement Slurry
RECOMMENDED USE AND RESTRICTION ON USE Used for construction purposes This product is not intended or designed for and should not be used as an abrasive blasting medium or for foundry applications.		
MANUFACTURER/SUPPLIER INFORMATION Martin Marietta Materials 2710 Wycliff Road Raleigh, North Carolina 27607 Phone: 919-781-4550 For additional health, safety or regulatory information and other emergency situations, call 919-781-4550		

SECTION II – HAZARD(S) IDENTIFICATION

HAZARD CLASSIFICATION: Category 1A Carcinogen Category 1 Specific Target Organ Toxicity (STOT) following repeated exposures Category 1 Eye Damage Category 2 Skin Irritant	
SIGNAL WORD: DANGER	
HAZARD STATEMENTS: May cause cancer by inhalation. Causes damage to lungs, kidneys and autoimmune system through prolonged or repeated exposure by inhalation. Causes skin irritation and serious eye damage.	
PRECAUTIONARY STATEMENTS Do not handle until the safety information presented in this SDS has been read and understood. Do not breathe dusts or mists. Do not eat, drink or smoke while manually handling this product. Wash skin thoroughly after manually handling. If on skin: Rinse skin after manually handling and wash contaminated clothing if there is potential for direct skin contact before reuse. If swallowed: Rinse mouth and do not induce vomiting. If inhaled excessively: Remove person to fresh air and keep comfortable for breathing. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do, and continue rinsing. If exposed, concerned, unwell or irritation of the eyes, skin, mouth or throat/nasal passage persist: Get medical attention. Wear eye protection and respiratory protection following this SDS, NIOSH guidelines and other applicable regulations. Use protective gloves if manually handling the product. Avoid creating dust when handling, using or storing. Use with adequate ventilation to keep exposure below recommended exposure limits. Dispose of product in accordance with local, regional, national or international regulations. Please refer to Section XI for details of specific health effects of the components.	

SECTION III – COMPOSITION/INFORMATION ON INGREDIENTS

COMPONENT(S) CHEMICAL NAME	CAS REGISTRY NO	% by weight (approx)
Portland Cement or Hydraulic Cement	65997-15-1	90-96
Gypsum ⁽¹⁾	13397-24-5	2-5
Crystalline Silica, Quartz	14808-60-7	0-0.05
Limestone	1317-65-3	0-5

(1): The composition of gypsum may be up to 100% calcium sulfate (CaSO₄)
May contain trace amounts of heavy metals.

SECTION IV – FIRST-AID MEASURES

INHALATION: If excessive inhalation occurs, remove to fresh air. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists or develops later.

EYES: Immediately flush eye(s) with plenty of clean water for at least 15 minutes, while holding the eyelid(s) open. Occasionally lift the eyelid(s) to ensure thorough rinsing. Remove contact lenses, if present and easy to do, and continue rinsing. Beyond flushing, do not attempt to remove material from the eye(s). Contact a physician if irritation persists or develops later.

SKIN: Rinse skin with soap and water after manually handling and wash contaminated clothing if there is potential for direct skin contact. Contact a physician if irritation persists or develops later.

INGESTION: If swallowed, rinse mouth and do not induce vomiting. If gastrointestinal discomfort occurs, persists or develops later, get medical attention.

SIGNS AND SYMPTOMS OF EXPOSURE: There are generally no signs or symptoms of exposure to respirable crystalline silica. Often, chronic silicosis has no symptoms. The symptoms of chronic silicosis, if present, are shortness of breath, wheezing, cough and sputum production. The symptoms of acute silicosis which can occur with exposures to very high concentrations of respirable crystalline silica over a very short time period, sometimes as short as 6 months, are the same as those associated with chronic silicosis; additionally, weight loss and fever may also occur. The symptoms of scleroderma, an autoimmune disease, include thickening and stiffness of the skin, particularly in the fingers, shortness of breath, difficulty swallowing and joint problems.

Direct skin and eye contact with dust generated may cause irritation by mechanical abrasion. Some components of the product are also known to cause corrosive effects to skin, eyes and mucous membranes. If product gets wet and contacts the eye, it can cause irritation and burning sensation, and may induce corneal edema (the victim may see colored rings or halos around lights). Liquid product can irritate the skin and may cause alkali burns. Repeated or prolonged contact may cause dermatitis. Individuals may develop an allergic dermatitis following contact with this product. Ingestion of large amounts may cause gastrointestinal irritation and blockage. Inhalation of dust may irritate nose, throat, mucous membranes and respiratory tract by mechanical abrasion or corrosive/irritant action. Coughing, sneezing, chest pain, shortness of breath, inflammation of mucous membrane, and flu-like fever may occur following exposures in excess of appropriate exposure limits. Repeated excessive exposure may cause pneumoconiosis, such as silicosis and other respiratory effects.

SECTION V – FIRE-FIGHTING MEASURES**EXTINGUISHING AGENT**

Not flammable; use extinguishing media compatible with surrounding fire.

UNUSUAL FIRE AND EXPLOSION HAZARD

Contact with powerful oxidizing agents may cause fire and/or explosions (see Section X of this SDS). While individual components are known to react vigorously with water to produce heat, this is not expected from this product. Contact of one of the ingredients with diazomethane vapor may cause an exotherm which may lead to detonation.

SPECIAL FIRE FIGHTING PROCEDURES

None known

HAZARDOUS COMBUSTION PRODUCTS

None known

SECTION VI – ACCIDENTAL RELEASE MEASURES**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED**

Persons involved in cleaning should first follow the precautions defined in Section VII of the SDS. Contain liquid spilled material and do not allow to flow in to public sewers or water systems where it can harden and clog flow. Allow material to harden and transfer into containers appropriate for proper disposal. Liquid product should be removed from roads or other surfaces where it may interfere with traffic.

Dry spilled materials, where dust can be generated, may overexpose cleanup personnel to respirable crystalline silica-containing dust and other components that may pose inhalation hazards. Do not dry sweep spilled material. Collect the material using a method that does not produce dust such as a High-Efficiency Particulate Air (HEPA) vacuum or thoroughly wetting down the dust before cleaning up. Wear appropriate personal protective equipment as specified in Section VIII including appropriate respirators during and following clean up or whenever airborne dust is present to ensure worker exposures remain below occupational exposure limits (OELs - Refer to Section VIII).

Place the cleaned-up dust in a covered container appropriate for disposal. Do not wash down drains, this material may plug drains. Dispose of the dust or liquid product according to federal, state and local regulations.

This product is not subject to the reporting requirements of SARA Title III Section 313, and 40 CFR 372.

SECTION VII – HANDLING AND STORAGE

This product is not intended or designed for and should not be used as an abrasive blasting medium or for foundry applications.

Store in a cool, dry, ventilated storage area in closed containers. Avoid freezing temperatures during storage. Store away from incompatible materials listed in Section X. The dihydrate form of calcium sulfate typically does not set with water however dew point conditions or other conditions causing presence of moisture may harden gypsum during storage.

Follow protective controls set forth in Section VIII of this SDS when handling this product. Dust containing respirable crystalline silica and other components that may be corrosive/irritant may be generated during processing, handling and storage. Use good housekeeping procedures to prevent the accumulation of dust in the workplace.

Do not breathe dust. Avoid contact with skin and eyes. Do not store near food or beverages or smoking materials. Do not stand on piles of materials; it may be unstable.

Use adequate ventilation and dust collection equipment and ensure that the dust collection system is adequate to reduce airborne dust levels to below the appropriate OELs. If the airborne dust levels are above the appropriate OELs, use respiratory protection during the establishment of engineering controls. Refer to Section VIII - Exposure Controls/Personal Protection for further information.

In accordance with OSHA's Hazard Communication Standard (29 CFR 1910.1200, 1915.99, 1917.28, 1918.90, 1926.59, 1928.21), state, and/or local right-to-know laws and regulations, familiarize your employees with this SDS and the information contained herein. Warn your employees, your customers and other third parties (in case of resale or distribution to others) of the potential health risks associated with the use of this product and train them in the appropriate use of personal protective equipment and engineering controls, which will reduce their risks of exposure.

See also ASTM International standard practice E 1132-06, "Standard Practice for Health Requirements Relating to Occupational Exposure to Respirable Crystalline Silica."

For safe handling and use of this product for Hydraulic Fracturing, please see the OSHA/NIOSH Hazard Alert Worker Exposure to Silica during Hydraulic Fracturing DHHS (NIOSH) Publication No. 2012-166 (2012).
http://www.osha.gov/dts/hazardalerts/hydraulic_frac_hazard_alert.pdf

SECTION VIII – EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne OELs for Components of Portland Cement:

COMPONENT(S) CHEMICAL NAME	MSHA/OSHA PEL	ACGIH TLV-TWA	NIOSH REL
Portland Cement	(T) 15 mg/m ³ , (R) 5 mg/m ³	(R) 1 mg/m ³	(T) 10 mg/m ³ , (R) 5 mg/m ³
Gypsum	⁽¹⁾ (T) 15 mg/m ³ , (R) 5 mg/m ³	(I) 10 mg/m ³	(T) 10 mg/m ³ , (R) 5 mg/m ³
Crystalline Silica, Quartz §	(R) 0.05 mg/m ³ (R) 0.025 mg/m ³ (AL)	(R) 0.025 mg/m ³ #	(R) 0.05 mg/m ³ #
Limestone	(T) 15 mg/m ³ , (R) 5 mg/m ³	-	(T) 10 mg/m ³ , (R) 5 mg/m ³

§ The OSHA OELs for respirable crystalline silica are listed in the table. As of June 28, 2018, the MSHA standard for respirable crystalline silica has not been changed but may be revised in the future. The MSHA PEL for dust containing crystalline silica (quartz) is based on the silica content of the respirable dust sample and is calculated as: 10 mg/m³/(% SiO₂+2). The MSHA PEL for crystalline silica as tridymite and cristobalite is one-half the PEL for crystalline silica (quartz). # The ACGIH and NIOSH limits are for crystalline silica (quartz), independent of the dust concentration. The ACGIH TLV for crystalline silica as cristobalite is equal to the TLV for crystalline silica as quartz. In 2005, ACGIH withdrew the TLV for crystalline silica as tridymite. The NIOSH REL for crystalline silica as cristobalite and tridymite is the same as for quartz. Refer to Section X for thermal stability information for crystalline silica (quartz).

AL: Action Level
 (1): MSHA/OSHA PEL based on Calcium Sulfate, CAS No. 7778-18-9.
 (R): Respirable Fraction.
 (T): Total Dust.
 (I): Inhalable Fraction.

Airborne OELs for Inert/Nuisance Dust:

Standard	Respirable Dust	Total Dust
MSHA/OSHA PEL (as Inert or Nuisance Dust)	5 mg/m ³	15 mg/m ³
ACGIH TLV (as Particles Not Otherwise Specified)	3 mg/m ³	*10 mg/m ³
NIOSH REL (Particulates Not Otherwise Regulated)	-	-

Note: The limits for Inert Dust are provided as guidelines. Nuisance dust is limited to particulates not known to cause systemic injury or illness.
 * The TLV provided is for inhalable particles not otherwise specified.

ENGINEERING CONTROLS

Ventilation: Use local exhaust, general ventilation or natural ventilation adequate to maintain exposures below appropriate exposure limits.

Other control measures: Respirable dust and crystalline silica levels should be monitored regularly. Dust and crystalline silica levels in excess of appropriate exposure limits should be reduced by implementing feasible engineering controls, including (but not limited to) dust suppression (wetting), ventilation, process enclosure and enclosed employee work stations.

EYE/FACE PROTECTION

Safety glasses with side shields should be worn as minimum protection. Dust goggles should be worn when excessively (visible) dusty conditions are present or are anticipated. If irritation persists, get medical attention immediately. There is potential for severe eye irritation if exposed to excessive concentrations of dust for those using contact lenses.

SKIN PROTECTION

Chemical resistant apron. Loose clothing, with the neck closed and sleeves rolled down. Safety shoes should be laced so that no openings are left through which concrete may reach the skin. Use appropriate chemical resistant protective gloves if manually handling the product.

SECTION VIII – EXPOSURE CONTROLS/PERSONAL PROTECTION, CONTD.**RESPIRATORY PROTECTION**

Respirator Recommendations:

For respirable crystalline silica levels that exceed or are likely to exceed appropriate exposure limits, a NIOSH-approved particulate filter respirator must be worn. Respirator use must comply with applicable MSHA or OSHA standards, which include provisions for a user training program, respirator repair and cleaning, respirator fit testing, and other requirements. For additional information contact NIOSH at 1-800-356-4674 or visit website: <http://www.cdc.gov/niosh/npg> (search for crystalline silica). See also ANSI standard Z88.2 (latest revision) "American National Standard for Respiratory Protection," 29 CFR 1910.134 and 1926.103, and 42 CFR 84.

NIOSH recommendations for respiratory protection include:

Up to 0.5 mg/m³:

(APF = 10) Any particulate respirator equipped with an N95, R95, or P95 filter (including N95, R95, and P95 filtering facepieces) except quarter-mask respirators. The following filters may also be used: N99, R99, P99, N100, R100, P100.

Up to 1.25 mg/m³:

(APF = 25) Any powered, air-purifying respirator with a high-efficiency particulate (100-series) filter.

(APF = 25) Any supplied-air respirator operated in a continuous-flow mode

Up to 2.5 mg/m³:

(APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter.

(APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter

Up to 25 mg/m³:

(APF = 1000) Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode

Emergency or planned entry into unknown concentrations or IDLH conditions (50 mg/m³ for crystalline silica-quartz): A self-contained breathing apparatus (SCBA) that has a full-face piece and is operated in a pressure-demand or other positive-pressure mode or any supplied-air respirator that has a full-face piece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus.

Escape from unknown or IDLH conditions: An air-purifying, full-face piece respirator with a high-efficiency particulate (100-series) filter or any appropriate escape-type, self-contained breathing apparatus.

If the workplace airborne crystalline silica concentration is unknown for a given task, conduct air monitoring to determine the appropriate level of respiratory protection to be worn. Consult with a certified industrial hygienist, your insurance risk manager or the OSHA Consultative Services group for detailed information. Ensure appropriate respirators are worn, as needed, during and following the task, including clean up or whenever airborne dust is present, to ensure worker exposures remain below OELs.

GENERAL HYGIENE CONSIDERATIONS

There are no known hazards associated with this material when used as recommended. Following the guidelines in this SDS are recognized as good industrial hygiene practices. Avoid breathing dust. Avoid skin and eye contact. Wash dust-exposed skin with soap and water before eating, drinking, smoking and using toilet facilities. Wash work clothes after each use.

SECTION IX— PHYSICAL AND CHEMICAL PROPERTIES	
APPEARANCE Portland Cement is a fine, gray powder	ODOR AND ODOR THRESHOLD Odorless and not applicable
pH AND VISCOSITY Not available and not applicable	MELTING POINT/FREEZING POINT Not applicable
BOILING POINT AND RANGE Not applicable	FLASH POINT AND FLAMMABILITY Not applicable
FLAMMABILITY/EXPLOSIVE LIMITS AND AUTOIGNITION TEMPERATURE Not applicable	EVAPORATION RATE AND DECOMPOSITION TEMPERATURE Not applicable
VAPOR PRESSURE AND VAPOR DENSITY IN AIR Not applicable	SPECIFIC GRAVITY. 3.05-3.20
SOLUBILITY IN WATER Slightly soluble (0.1 to 1.0%)	PARTITION COEFFICIENT: N-OCTANOL/WATER Not applicable

SECTION X – STABILITY AND REACTIVITY	
STABILITY Stable	CONDITIONS TO AVOID Contact with incompatible materials (see below).
THERMAL STABILITY If crystalline silica (quartz) is heated to more than 870°C (1598°F), it can change to a form of crystalline silica known as tridymite, and if crystalline silica (quartz) is heated to more than 1470°C (2678°F), it can change to a form of crystalline silica known as cristobalite.	
INCOMPATIBILITY (Materials to avoid) Contact with powerful oxidizing agents such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride may cause fire and/or explosions. Some components of product may react vigorously with water. Product may react with strong acids to produce a violent, exothermic reaction and may evolve toxic gases or vapors, depending on the acid involved. Contact of some components with diazomethane vapor may cause an exotherm which may lead to detonation. Calcium sulfate is reduced violently or explosively on heating an intimate mixture with aluminum powder to a suitably high temperature to initiate the reaction.	
HAZARDOUS DECOMPOSITION PRODUCTS Silica dissolves in hydrofluoric acid producing a corrosive gas - silicon tetrafluoride.	
HAZARDOUS POLYMERIZATION Not known to polymerize	

SECTION XI – TOXICOLOGICAL INFORMATION

Health Effects: The information below represents an overview of health effects caused by overexposure to one or more components in portland cement.

Primary routes(s) of exposure: Inhalation Skin Ingestion

EYE CONTACT: Direct contact with dust may cause irritation by mechanical abrasion or corrosive action. Conjunctivitis may occur.

SKIN CONTACT: Direct contact may cause irritation by mechanical abrasion. Some components of material are also known to cause corrosive effects to skin and mucous membranes.

SKIN ABSORPTION: Not expected to be a significant route of exposure.

INGESTION: Small amounts (a tablespoonful) swallowed during normal handling operations are not likely to cause injury. Ingestion of large amounts may cause gastrointestinal irritation and blockage.

INHALATION: Dust may irritate nose, throat, mucous membranes and respiratory tract by mechanical abrasion. Coughing, sneezing, chest pain, shortness of breath, inflammation of mucous membrane, and flu-like fever may occur following exposures in excess of appropriate exposure limits.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Inhaling respirable dust and/or crystalline silica may aggravate existing respiratory system disease(s) (e.g., bronchitis, emphysema, chronic obstructive pulmonary disease) and/or dysfunctions. Exposure to dust may aggravate existing skin and/or eye conditions. Smoking and obstructive/restrictive lung diseases may also exacerbate the effects of excessive exposure to this product.

This product is a mixture of components. The composition percentages are listed in Section III. Toxicological information for each component is listed below:

Chronic exposure to liquid cement has caused chronic dermatitis, the symptoms of which may include erythema (reddening), skin irritation, and eczematous rashes. Drying, thickening, and cracking of the skin and nails may also occur. Irritated or broken skin is more likely to develop further complications such as ulcers and infection, and may increase the chance of absorbing toxic materials into the body through the skin.

Individuals who become allergically sensitized to hexavalent chromates may experience an allergic reaction upon subsequent contact with those compounds (delayed Type IV hypersensitivity reaction).

The chronic toxicity effects described above have been associated with exposure to the product, if it gets wet. These effects are extremely unlikely to occur with dry product.

Portland Cement:

Exposure Routes: inhalation, ingestion, skin and/or eye contact

Target Organs: Eyes, skin, respiratory system.

Acute Effect: Exposure to dry portland cement may cause drying of the skin and mild irritation, or more significant effects from the aggravation of other conditions. Liquid portland cement is caustic (pH > 12) and dermal exposure may cause more severe skin effects, including thickening, cracking or fissuring of the skin. Eye exposures to portland cement may cause immediate or delayed irritation or inflammation of the cornea. Eye contact with larger amounts of dry powder or splashes of liquid portland cement may cause effects ranging from moderate eye irritation to chemical burns and blindness. Inhalation of dry portland cement may cause irritation to the moist mucous membranes of the nose, throat and upper respiratory system, or may cause or aggravate certain lung diseases or conditions.

Chronic Effect: Prolonged exposure can cause severe skin damage in the form of chemical (caustic) burns. Portland Cement is not listed as carcinogen on the NTP, IARC or OSHA list of carcinogens, however Portland Cement contains trace amounts of hexavalent chromium [Cr(VI)] and certain chromium compounds which are listed on the NTP and IARC lists of carcinogens. The total amounts of chromium and chromium compounds in Portland Cement are typically less than 0.003% and hexavalent chromium less than 0.001%.

Note: Some individuals who are exposed to portland cement may exhibit an allergic response, which can result in symptoms

SECTION XI – TOXICOLOGICAL INFORMATION, CONTD.

ranging from mild rashes to severe skin ulcers. Cement dermatitis may be irritant contact dermatitis induced by the alkaline, abrasive, and hygroscopic (water-absorbing) properties of portland cement, or it may be allergic contact dermatitis elicited by an immunological reaction to Cr(VI), or it may be a combination of the two.

Silicon Dioxide: It is comprised of amorphous and crystalline forms of silica. In some batches, crystalline silica may represent up to 100% of silicon dioxide.

Exposure route: Eyes, respiratory system.

Target organs: Eyes, skin, respiratory system.

ACGIH, MSHA, and OSHA have determined that adverse effects are not likely to occur in the workplace provided exposure levels do not exceed the appropriate exposure limits. Lower exposure limits may be appropriate for some individuals including persons with pre-existing medical conditions as described under medical conditions aggravated by exposure.

A. SILICOSIS

The major concern is silicosis (lung disease), caused by the inhalation and retention of respirable crystalline silica dust. Silicosis leads to conditions such as lung fibrosis and reduced pulmonary function. The form and severity in which silicosis manifests itself, depends in part on the type and extent of exposure to silica dusts: chronic, accelerated and acute forms are recognized. In later stages the critical condition may become disabling and potentially fatal. Restrictive and/or obstructive changes in lung function may occur due to exposure. A risk associated with silicosis is development of pulmonary tuberculosis (silico-tuberculosis). Respiratory insufficiencies due to massive fibrosis and reduced pulmonary function, possibly with accompanying heart failure, are other potential causes of death due to silicosis.

Chronic or Ordinary Silicosis is the most common form of silicosis and can occur after many years of exposure to levels above the occupational exposure limits for airborne respirable crystalline silica dust. Not all individuals with silicosis will exhibit symptoms (signs) of the disease. Symptoms of silicosis may include (but are not limited to): Shortness of breath; difficulty breathing with or without exertion; coughing; diminished work capacity; diminished chest expansion; reduction of lung volume; heart enlargement and/or failure. It is further defined as either simple or complicated silicosis.

Simple Silicosis is characterized by lung lesions (shown as radiographic opacities) less than 1 centimeter in diameter, primarily in the upper lung zones. Often, simple silicosis is not associated with symptoms, detectable changes in lung function or disability. Simple silicosis may be progressive and may develop into complicated silicosis or progressive massive fibrosis (PMF).

Complicated Silicosis or PMF is characterized by lung lesions (shown as radiographic opacities) greater than 1 centimeter in diameter. Although there may be no symptoms associated with complicated silicosis or PMF, the symptoms, if present, are shortness of breath, wheezing, cough and sputum production. Complicated silicosis or PMF may be associated with decreased lung function and may be disabling. Advanced complicated silicosis or PMF may lead to death. Advanced complicated silicosis or PMF can result in heart disease (cor pulmonale) secondary to the lung disease.

Accelerated Silicosis can occur with exposure to high concentrations of respirable crystalline silica over a relatively short period; the lung lesions can appear within five (5) years of the initial exposure. The progression can be rapid. Accelerated silicosis is similar to chronic or ordinary silicosis, except that the lung lesions appear earlier and the progression is more rapid.

Acute Silicosis can occur with exposures to very high concentrations of respirable crystalline silica over a very short time period, sometimes as short as a few months. The symptoms of acute silicosis include progressive shortness of breath, fever, cough and weight loss. Acute silicosis is a rapidly progressive, incurable lung disease and is typically fatal.

Complicated Silicosis or PMF is characterized by lung lesions (shown as radiographic opacities) greater than 1 centimeter in diameter. Although there may be no symptoms associated with complicated silicosis or PMF, the symptoms, if present, are shortness of breath, wheezing, cough and sputum production. Complicated silicosis or PMF may be associated with decreased lung function and may be disabling. Advanced complicated silicosis or PMF may lead to death. Advanced complicated silicosis or PMF can result in heart disease (cor pulmonale) secondary to the lung disease.

Accelerated Silicosis can occur with exposure to high concentrations of respirable crystalline silica over a relatively short period; the lung lesions can appear within five (5) years of the initial exposure. The progression can be rapid. Accelerated silicosis is similar to chronic or ordinary silicosis, except that the lung lesions appear earlier and the progression is more rapid.

Acute Silicosis can occur with exposures to very high concentrations of respirable crystalline silica over a very short time period,

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B. CANCER

IARC - The International Agency for Research on Cancer ("IARC") concluded that there is "*sufficient evidence* in humans for the carcinogenicity of crystalline silica in the form of quartz or cristobalite", there is "*sufficient evidence* in experimental animals for the carcinogenicity of quartz dust" and that there is "*limited evidence* in experimental animals for the carcinogenicity of tridymite dust and cristobalite dust." The overall IARC evaluation was that "crystalline silica inhaled in the form of quartz or cristobalite dust is *carcinogenic to humans (Group I)*." The IARC evaluation noted that not all industrial circumstances studied evidenced carcinogenicity. The monograph also stated that "Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs." For further information on the IARC evaluation, see IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 100C, "Silica Dust, Crystalline, in the Form of Quartz or Cristobalite" (2012).

NTP - In its Eleventh Annual Report on Carcinogens, concluded that respirable crystalline silica is known to be a human carcinogen, based on sufficient evidence of carcinogenicity from studies in humans indicating a causal relationship between exposure to respirable crystalline silica and increased lung cancer rates in workers exposed to crystalline silica dust.

OSHA - Crystalline silica is not on the OSHA carcinogen list.

CALIFORNIA PROPOSITION 65 - Crystalline silica in October 1996 was listed on the Safe Drinking Water and Toxic Enforcement ACT of 1986 as a chemical known to the state to cause cancer or reproductive toxicity.

There have been many articles published on the carcinogenicity of crystalline silica, which the reader should consult for additional information; the following are examples of recently published articles: (1) "Dose-Response Meta-Analysis of Silica and Lung Cancer", *Cancer Causes Control*, (20):925-33 (2009); (2) "Occupational Silica Exposure and Lung Cancer Risk: A Review of Epidemiological Studies 1996-2005", *Ann Oncol*, (17) 1039-50 (2006); (3) "Lung Cancer Among Industrial Sand Workers Exposed to Crystalline Silica", *Am J Epidemiol*, (153) 695-703 (2001); (4) "Crystalline Silica and The Risk of Lung Cancer in The Potteries", *Occup Environ Med*, (55) 779-785 (1998); (5) "Is Silicosis Required for Silica-Associated Lung Cancer?", *American Journal of Industrial Medicine*, (37) 252- 259 (2000); (6) "Silica, Silicosis, and Lung Cancer: A Risk Assessment", *American Journal of Industrial Medicine*, (38) 8-18 (2000); (7) "Silica, Silicosis, and Lung Cancer: A Response to a Recent Working Group Report", *Journal of Occupational and Environmental Medicine*, (42) 704-720 (2000).

C. AUTOIMMUNE DISEASES

There is evidence that exposure to respirable crystalline silica (without silicosis) or that the disease silicosis may be associated with the increased incidence of several autoimmune disorders, -- scleroderma, systemic lupus erythematosus, rheumatoid arthritis and diseases affecting the kidneys. For a review of the subject, the following may be consulted: (1) "Antinuclear Antibody and Rheumatoid Factor in Silica-Exposed Workers", *Arh Hig Rada Toksikol*, (60) 185-90 (2009); (2) "Occupational Exposure to Crystalline Silica and Autoimmune Disease", *Environmental Health Perspectives*, (107) Supplement 5, 793-802 (1999); (3) "Occupational Scleroderma", *Current Opinion in Rheumatology*, (11) 490-494 (1999); (4) "Connective Tissue Disease and Silicosis", *Am J Ind Med*, (35), 375-381 (1999).

D. TUBERCULOSIS

Individuals with silicosis are at increased risk to develop pulmonary tuberculosis, if exposed to persons with tuberculosis. The following may be consulted for further information: (1) "Tuberculosis and Silicosis: Epidemiology, Diagnosis and Chemoprophylaxis", *J Bras Pneumol*, (34) 959-66 (2008); (2) *Occupational Lung Disorders*, Third Edition, Chapter 12, entitled "Silicosis and Related Diseases", Parkes, W. Raymond (1994); (3) "Risk of Pulmonary Tuberculosis Relative to Silicosis and Exposure to Silica Dust in South African Gold Miners," *Occup Environ Med*, (55) 496-502 (1998); (4) "Occupational Risk Factors for Developing Tuberculosis", *Am J Ind Med*, (30) 148-154 (1996).

E. KIDNEY DISEASE

There is evidence that exposure to respirable crystalline silica (without silicosis) or that the disease silicosis is associated with the increased incidence of kidney diseases, including end stage renal disease. For additional information on the subject, the following may be consulted: (1) "Mortality from Lung and Kidney Disease in a Cohort of North American Industrial Sand Workers: An Update", *Ann Occup Hyg*, (49) 367-73 (2005); (2) "Kidney Disease and Silicosis", *Nephron*, (85) 14-19 (2000); (3) "End Stage Renal Disease Among Ceramic Workers Exposed to Silica", *Occup Environ Med*, (56) 559-561 (1999); (4) "Kidney Disease and Arthritis in a Cohort Study of Workers Exposed to Silica", *Epidemiology*, (12) 405-412 (2001).

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F. NON-MALIGNANT RESPIRATORY DISEASES

NIOSH has cited the results of studies that report an association between dusts found in various mining operations and non-malignant respiratory disease, particularly among smokers, including bronchitis, emphysema, and small airways disease. *NIOSH Hazard Review – Health Effects of Occupational Exposure to Respirable Crystalline Silica*, published in April 2002, available from NIOSH, 4676 Columbia Parkway, Cincinnati, OH 45226, or at <https://www.cdc.gov/niosh/docs/2002-129/default.html>.

Respirable dust containing newly broken particles has been shown to be more hazardous to animals in laboratory tests than respirable dust containing older silica particles of similar size. Respirable silica particles which had aged for sixty days or more showed less lung injury in animals than equal exposures of respirable dust containing newly broken pieces of silica.

Gypsum (Calcium Sulfate):

Exposure route: Inhalation, skin and/or eye contact

Target Organs: Eyes, skin, respiratory system

Acute Effect: Calcium sulfate dust has an irritant action on mucous membranes of the respiratory tract and eyes. There have been reports of conjunctivitis, chronic rhinitis, laryngitis, pharyngitis, impaired sense of smell and taste, bleeding from the nose and reactions of tracheal and bronchial membranes in exposed workers.

Chronic Effect: N/A

Limestone:

Exposure Route: Eyes, skin, inhalation, ingestion.

Target Organs: Eyes, skin, respiratory system, gastrointestinal system

Acute Effect: Direct eye and skin contact with dust may cause irritation by mechanical abrasion or burning sensations, pain or blisters from corrosive/irritant effects. Dusts may irritate the nose, throat, gastrointestinal region and respiratory tract by mechanical abrasion or corrosive/irritant action. Coughing, sneezing, chest pain, shortness of breath, inflammation of mucous membrane, and flu-like fever may occur following exposures in excess of appropriate exposure limits. Small amounts (a tablespoonful) swallowed during normal handling operations are not likely to cause injury. Ingestion of large amounts may cause gastrointestinal irritation and blockage. Other conditions related to acute exposure to some of the metal oxides in limestone include stupor, shock, acidosis, abdominal pain, hematemesis, bloody diarrhea, coma, vomiting, diarrhea, mild lethargy, benign pneumoconiosis, sore throat, burning sensation, inflammation of the respiratory passages, ulceration, perforation of the nasal septum, pneumonia and conjunctivitis.

Chronic Effect: Repeated exposure to respirable dust in excess of appropriate exposure limits has caused silicosis, a progressive pneumoconiosis (lung disease) and lung cancer. Restrictive and/or obstructive lung function changes may result from chronic exposure. Chronic tobacco smoking may further increase the risk of developing chronic lung problems. On occasion workers chronically exposed to the metal oxides in limestone have developed severe pulmonary reactions, effects on the central nervous system, irritability, nausea or vomiting, normocytic anemia, fibrosis of the pancreas, diabetes mellitus, liver cirrhosis, and “mixed dust pneumoconiosis.”

Acute Toxicity Estimates for Portland Cement – Not Available

SECTION XII – ECOLOGICAL INFORMATION

No data available for this product.

SECTION XIII – DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD

Collect and reuse clean materials. Landfill waste materials at approved sites. Dispose of waste materials only in accordance with applicable federal, state, and local laws and regulations.

The above information applies to Martin Marietta Materials product only as sold. The product may be contaminated during use and it is the responsibility of the user to assess the appropriate disposal method in that situation.

SECTION XIV – TRANSPORT INFORMATION

DOT HAZARD CLASSIFICATION

None

PLACARD REQUIRED

None

LABEL REQUIRED

Label as required by the OSHA Hazard Communication standard {29 CFR 1910.1200(f)}, and applicable state and local regulations.

SECTION XV – REGULATORY INFORMATION

OSHA: Crystalline Silica is not listed as a carcinogen.

Product may contain trace amounts of hexavalent chromium [Cr(VI)] and certain chromium compounds which are listed in the NTP and IARC lists of carcinogens

SARA Title III: Section 311 and 312: Immediate health hazard and delayed health hazard.

TSCA: Crystalline silica (quartz) and Portland Cement appear on the EPA TSCA inventory under the CAS No. 14808-60-7, and 65997-15-1, respectively.

RCRA: This product is not classified as a hazardous waste under the Resource Conservation and Recovery Act, or its regulations, 40 CFR §261 *et seq.*

CERCLA: This product is not classified as a hazardous substance under regulations of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 40 CFR §302.4

EPCRA (Emergency Planning and Community Right to Know Act): Crystalline silica (quartz) is not an extremely hazardous substance under regulations of the Emergency Planning and Community Right to Know Act, 40 CFR Part 355, Appendices A and B and the product is not a toxic chemical subject to the requirements of Section 313.

Clean Air Act: Crystalline silica (quartz) mined and processed by Martin Marietta Materials was not processed with or does not contain any Class I or Class II ozone depleting substances.

FDA: Silica is included in the list of substances that may be included in coatings used in food contact surfaces, 21 CFR §175.300(b)(3). (The FDA standard primarily applies to products containing silica used in the coatings of food contact surfaces).

California Proposition 65: Respirable crystalline silica is classified as a substance known to the state of California to be a carcinogen. Cr(VI) is classified as a substance known to the state of California to be a carcinogen and cause reproductive toxicity.

Massachusetts Toxic Use Reduction Act: Respirable crystalline silica is considered toxic per the Massachusetts Toxic Use Reduction Act when used in abrasive blasting and molding.

Pennsylvania Worker and Community Right to Know Act: Quartz is considered hazardous for purposes of the Act, but it is not a special hazardous substance or an environmental hazardous substance.

SECTION XVI – OTHER INFORMATION

DEFINITIONS OF ACRONYMS/ABBREVIATIONS

ACGIH: American Conference of Governmental Industrial Hygienists

AL: Action Level

ANSI: American National Standards Institute

APF: Assigned Protection Factor

California REL: California Inhalation Reference Exposure Limit

CAS: Chemical Abstracts Service

CERCLA: Comprehensive Environmental Response, Compensation and Liability Act

CFR: US Code of Federal Regulations

DHHS: Department of Health and Human Services

EPA: Environmental Protection Agency

EPCRA: Emergency Planning and Community Right to Know Act

FDA: Food and Drug Administration

GHS: Globally Harmonized System

HEPA: High-Efficiency Particulate Air

IARC: International Agency for Research on Cancer

IDLH: Immediately Dangerous to Life and Health

MSHA: Mine Safety and Health Administration

NIOSH: National Institute for Occupational Safety and Health, US Department of Health and Human Services

NIOSH REL: NIOSH Recommended Exposure Limit

SECTION XVI – OTHER INFORMATION, CONTD.

DEFINITIONS OF ACRONYMS/ABBREVIATIONS, CONTD.

NTP: National Toxicology Program
OEL: Occupational Exposure Limit
OSHA: Occupational Safety and Health Administration, US Department of Labor
PEL: Permissible Exposure Limit
PMF: Progressive Massive Fibrosis
RCRA: Resource Conservation and Recovery Act
SARA Title III: Title III of the Superfund Amendments and Reauthorization Act, 1986
SDS: Safety Data Sheet
STOT: Specific Target Organ Toxicity
TLV: Threshold Limit Value
TSCA: Toxic Substance Control Act
TWA: Time-Weighted Average

User's Responsibility: The OSHA Hazard Communication Standard 29 CFR 1910.1200 requires that this SDS be made available to your employees who handle or may be exposed to this product. Educate and train your employees regarding applicable precautions. Instruct your employees to handle this product properly.

Disclaimer: The information contained in this document applies to this specific material as supplied and Martin Marietta Materials believes that the information contained in this SDS is accurate. The suggested precautions and recommendations are based on recognized good work practices and experience as of the date of publication. They are not necessarily all-inclusive or fully adequate in every circumstance as not all use circumstances can be anticipated. It may not be valid for this material if it is used in combination with other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for one's own particular use. Since the actual use of the product described herein is beyond our control, Martin Marietta Materials, assumes no liability arising out of the use of the product by others. Appropriate warnings and safe handling procedures should be provided to handlers and users. Also, the suggestions should not be confused with nor followed in violation of applicable laws, regulation, rules or insurance requirement. However, product must not be used in a manner which could result in harm.

An electronic version of this SDS is available at www.martinmarietta.com. More information on the effects of crystalline silica exposure may be obtained from OSHA (phone number: 1-800-321-OSHA; website: <http://www.osha.gov>) or from NIOSH (phone number: 1-800-35-NIOSH; website: <http://www.cdc.gov/niosh>).

DATE OF PREPARATION 6/2018

REPLACES 5/2015

NO WARRANTY, EXPRESSED OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE IS MADE



August 14, 2019

Mr. Greg Suttle
Executive Director of Facility Services and Construction
McKinney Independent School District
#1 Duvall Street
McKinney, Texas 75069

and

Mr. Jason Reed
Vice President - Operations Services
Martin Marietta
1503 LBJ Freeway, Suite 400
Dallas, Texas 75234

**RE: Walkthrough Inspection Report
Malvern Elementary School**

Dear Mr. Suttle and Mr. Reed:

Sandler Occupational Medicine Associates, Inc. (SOMA) is providing this report of the inspection conducted at the Malvern Elementary School in McKinney, Texas (TX). This report provides the findings of the inspection.

Project Background

Malvern Elementary School is located at 1100 Eldorado Parkway in McKinney, TX. On the night of July 18, 2019, there was an accidental release of cement dust from a Martin Marietta (MM) ready-mix plant located approximately one mile southeast of Malvern Elementary School. SOMA was requested to inspect the school to determine the potential for exposures to students and school personnel to cement dust, if any.

Scope of Services

On August 12, 2019, SOMA industrial hygienist Mr. Mauricio Alvarez, MES, conducted a walkthrough inspection between 8:00 am and 9:30 am, at the Malvern Elementary School in McKinney. He was accompanied by MM representative, Mr. Jason Reed and multiple school representatives including Mr. Greg Suttle, Ms. Erica Wright and Junior Orozco. The following tasks were performed at the school:

- Conducted a walkthrough of the school including halls, several classrooms in each hall, the cafeteria, the gymnasium, the administrative area and the library;
- Inspected various surfaces such as desks, window sills, bookshelves, doors and floors for visible signs of significant dust accumulation;
- Observed approximately one dozen air filters at a facility located off-campus that were removed from the school's heating, ventilating and air-conditioning (HVAC) system after July 18, 2019; and,
- Measured instantaneous concentrations of ambient particulates (dust) with a SidePak™ Personal Aerosol Monitor. This device is a portable instrument with a digital readout, and was set to draw air at approximately 1.7 liters per minute through a cyclone. The cyclone is designed to isolate and collect a respirable sized fraction of dust. The respirable fraction of dust is defined as a selection of dust where 99 percent of the dust have an aerodynamic diameter of less than 10 microns (μm) and a 50% cut-point of dust equal to 4 μm in diameter. Instantaneous dust concentrations were measured indoors at the school, the outside perimeter of the school and in a neighborhood in the Old McKinney area in Texas, an area not claimed to be affected by the cement dust release incident.

Findings

Ms. Wright reported that the school remained open from Monday to Friday in July and August, after the dust release, for summer school classes. She also indicated that routine cleanup tasks of indoor areas throughout the school were performed on a daily basis during the summer classes. She added that no additional cleaning was performed as a direct response to the dust release, as the incident did not have an obvious impact indoors at the school. Mr. Suttle indicated that the air filters in the various HVAC systems in the school were replaced after July 18, 2019 and placed at an off-campus facility.

The school is designed as an "open concept" plan, in which most of the classrooms were not separated by walls or doors from the hallways. The areas visually inspected were clean and excess dust was not observed. The minimal dust that could be wiped from some surfaces was coarse in texture and dark in color. The accumulated dust observed on air filters that were removed after July 18, 2019 was coarse in texture and brownish in color. It is unclear if the dust and debris observed on the filters was indicative of dust accumulated on the filters prior to them being



removed or from activities associated with the transport or storage location. Cement dust is typically fine in texture and whitish in color. The dust observed on surfaces and on the air filters was not visually similar to cement dust.

Dust concentrations were measured indoors and outdoors at the school and in a neighborhood where there was no claim of being affected by cement dust. The dust concentrations measured inside the school ranged from 0.01 to 0.035 mg/m³ inside the school and ranged from 0.042 to 0.062 mg/m³ outdoors near the perimeter of the school. The dust concentrations measured in the neighborhood where there were no complaints of exposure to cement dust from the July 18th incident ranged from 0.04 to 0.06 mg/m³, which was similar to that outside Malvern Elementary School. The dust concentrations measured indoors were less than the concentrations measured outdoors.

The Occupational Safety and Health Administration (OSHA) has established a Permissible Exposure Limit (PEL) for respirable particulates of 5 mg/m³ and the American Conference of Governmental Industrial Hygienists (ACGIH) has established a Threshold Limit Value (TLV) of 3 mg/m³, both as an 8-hour time-weighted average over a 40-hour work week. These values are established as levels of exposure that an employee may be exposed to, over a work week, without incurring the risk of adverse health effects. Although, these are occupational exposure limits and not directly comparable to instantaneous dust concentration measurements, it was observed that the dust concentrations measured at the school were well below the OSHA PEL and ACGIH TLV.

Based on the walkthrough inspection of the indoor areas and visual observation of the air filters and surfaces, there was no indication of significant settled dust in the school likely to be associated with the cement dust release of July 18, 2019. The observed lack of cement dust and the measured dust concentrations suggest that it is unlikely that students, visitors or school personnel at Malvern Elementary School could be exposed to significant concentrations of cement dust.

Limitations

The conclusions and recommendations contained in this report are based on observations and test data obtained during this evaluation. The test data are to be considered the condition for a “snapshot in time” and are pertinent for the particular times and for the particular locations in which the testing was conducted. The data collected were used to draw conclusions regarding past conditions. During the evaluation, it has been endeavored to observe the existing conditions using generally accepted procedures. The findings are based upon observations and analysis of the samples collected at the time of the visit.



Following your review of this report if you have questions or concerns, please do not hesitate to contact us at (703) 707-9180.

Sincerely,



Mauricio Alvarez, MES
Staff Industrial Hygienist



Priya Nagarajan, M.Eng., CIH
Director of Industrial Hygiene & Toxicology

MA/PN:ma

