



## Clearwater Technologies LLC

*Facilitating the Industry Solution to Environmental Stewardship*

Ryan A. Thompson, CEO  
626 Beaver Street  
Sewickley, PA 15143  
☎ 412.741.8189

[ryanthompson@pennclearwater.com](mailto:ryanthompson@pennclearwater.com)

### **APPLICATION TO OPERATE A FACILITY**

*Ohio Department of Natural Resources  
Attn: Chief of Division of Oil and Gas Resources Management  
Division of Oil and Gas Resources Management  
2045 Morse Road, Building F-2  
Columbus, Ohio 43229-6693*

Dear Chief of the Division of Oil and Gas Resources Management:

Clearwater Technologies LLC would like to respectfully submit herewith the following recommended documentation in reference to an Ohio DNR *Application To Operate A Facility* application submission:

- I. Completed application form signed by Clearwater Technology CEO Ryan Thompson.
- II. Map and aerial photographs of the proposed site.
- III. Detailed explanation of the proposed process to store, recycle, treat, process or dispose of brine and other waste substances from production operations, including:
  - a. Water processing plant service offering description
  - b. General process description
  - c. General process flow schematic
  - d. Disclosure of chemical reagents and MSDS and a description of their function
- IV. Estimated volume of materials to be managed by the facility daily, monthly and annually.
- V. Methods of documenting the type and volume of materials received and reused, and the disposition of materials from the facility.

The recommended documentation is being submitted in the form of one (1) electronic copy and two (2) hard copies.

Specializing in providing practical and safe environmental solutions for industrial water use processes, construction operation compliance to water standards, and affordable solutions for water protection, Clearwater Technologies incorporates proven water treatment processes with state of the art technology, resulting in cost-effective, safe solutions for the clients we serve. Our focus is enabling clients to bring their wastewater disposal practices—in the most economical and efficient manner—into stringent tolerances acceptable by the DEP and EPA. We are solidly committed to working with partners to successfully facilitate the industry solution to environmental stewardship in light of ever-increasing public, regulatory and legal pressure for proactive and optimally-effective wastewater treatment processes.

Thank you for your consideration, and please do not hesitate to contact us with any questions or for any required additional information.

Regards,

Ryan Thompson  
CEO, Clearwater Technologies LLC





**Clearwater Technologies LLC**  
*Facilitating the Industry Solution to Environmental Stewardship*

**I. Completed and Signed Application Form**





**APPLICATION TO OPERATE A FACILITY**  
OHIO DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL AND GAS RESOURCES MANAGEMENT  
2045 MORSE ROAD, BUILDING F-2  
COLUMBUS, OHIO 43229-6693  
(614) 265-6922

<b>1. Name of Applicant:</b> <u>Clearwater Technologies LLC</u> <b>Address:</b> <u>626 Beaver Street, Sewickley, PA 15143</u> <b>Date:</b> <u>8-22-2014</u> <b>eMail Address:</b> <u>ryanthompson@pennclearwater.com</u> <b>For an Order or a Permit to Operate:</b> <input checked="" type="checkbox"/> Existing Facility <input type="checkbox"/> New Facility	<b>Phone #:</b> <u>412-741-8189</u>
<b>2. PURPOSE OF FACILITY:</b> <input checked="" type="checkbox"/> Storage <input checked="" type="checkbox"/> Recycling <input checked="" type="checkbox"/> Treatment (Check all that Apply) <input checked="" type="checkbox"/> Processing <input type="checkbox"/> Disposal	
<b>3. TYPE OF MATERIAL:</b> <input checked="" type="checkbox"/> Brine <input type="checkbox"/> Drill Cuttings <input type="checkbox"/> Drilling Mud <input type="checkbox"/> Other Waste Substance (explain) _____	
<b>4. If a Business Entity, list the statutory agent and include a certified copy of their appointment:</b> <b>Name:</b> <u>Clearwater Technologies LLC</u> <b>Address:</b> <u>626 Beaver Street, Sewickley, PA 15143</u>	
<b>5. Engineer of Record:</b> <b>Name:</b> <u>James Albertz</u> <b>Address:</b> <u>Green Energy Initiatives LLC, 45050 National Road, St. Clairsville, OH 43950</u> <b>Ohio Professional Engineering License Number:</b> <u>#53228</u>	
<b>6. Address of Facility:</b> <b>Address:</b> <u>219 Public Road, Yorkville, OH</u> <b>County:</b> <u>Belmont</u> <b>Township:</b> <u>Warren</u> <b>Municipal Corporation:</b> _____ <b>Latitude:</b> <u>40.163549</u> <b>Longitude:</b> <u>-80.701144</u>	
<b>7. Write a brief description of the facility and operations:</b> <u>The facility located at the ESMARK (formerly the Ohio Cold Rolling Co. and Wheeling Pitt Steel plant) steel mill will capture the existing water treatment infrastructure currently permitted for the treatment of wastewater generated in the steel production process. The equipment -- including oil/water separator, sand filtration, aeration, and clarifiers -- will be repurposed to effectively and efficiently treat oil-produced, gas-produced and flowback wastewaters. The existing infrastructure has a full capacity of 1.5mm gpd operations and will require little modification to generate immediate services for the industry. The treatment facility, which will operate 24/7 for various oil and gas producers in the region, will treat for suspended solids, dissolved solids, pH neutralization and biocides.</u> _____ _____ _____	
<b>8. Include all information as set forth in the "Guidelines for Application for Chief's Order". Attach Additional Documents</b>	

I, the undersigned, being first duly sworn, depose and state under penalties of law, that I am authorized to make this application, that this application was prepared by me or under my supervision and direction, and that the facts stated herein are true, correct, and complete, to the best of my knowledge.

I certify that the facility will comply with or is currently in compliance with all provisions of Chapter 1509 ORC, Chapter 1501 OAC, and all terms and conditions of orders and permits issued by the Chief, Division of Oil and Gas Resources Management.

Signature of Authorized Agent 

Name (Type or Print) Ryan A. Thompson Title PRESIDENT

Sworn to and subscribed before me this the 2nd day of September, 2014.



COMMONWEALTH OF PENNSYLVANIA

Notarial Seal

Gwendolyn L. Safran, Notary Public

Sewickley Boro, Allegheny County

My Commission Expires April 8, 2015

MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES

*Gwendolyn L. Safran*  
(Notary Public)  
*Gwendolyn L. Safran*  
*April 8, 2015*  
(Date Commission Expires)





**Clearwater Technologies LLC**  
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## **II. Map and Aerial Photographs of Proposed Site**







Yorkville, OH

My Notes



On Phone? Use m.bing.com for mobile.  
 © 2014 Microsoft Corporation © 2014 Nokia







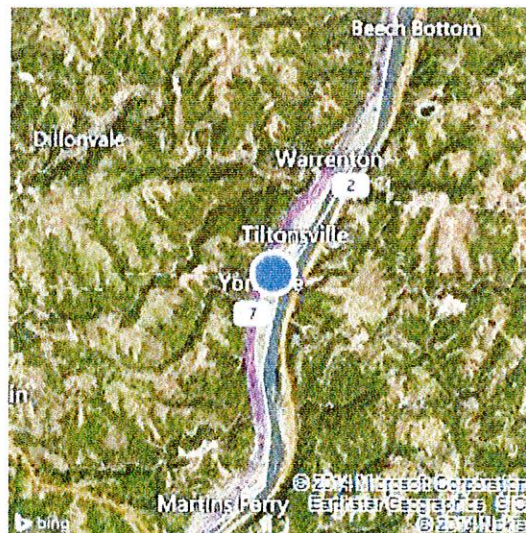




Yorkville, OH

My Notes

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Yorkville, OH

My Notes



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on your mobile device.









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### **III. Detailed Explanation of the Proposed Process to Store, Recycle, Treat, Process or Dispose of Brine and Other Waste Substances From Production Operations**

#### **III.a. Water Processing Plant Service Offering Description**

In its Yorkville, OH water processing facility, Clearwater Technologies will offer the thorough, efficient and cost-effective treatment of oil-produced, gas-produced and flowback wastewaters for various oil and gas producers in the region via its proprietary nine-step water treatment process. Operating on a 24/7 basis, the water treatment facility will treat for suspended solids, dissolved solids, pH neutralization and biocides—including sediment removal down to 10 microns. Full water processing is offered to customer specs for the removal of iron, manganese and additional dissolved solids other than salt, as well as Hydrocarbon flotation and removal. The facility capacity is up to 3MM gallons of fresh water distribution daily.

In addition to water treatment, Clearwater Technologies will offer custom blending with fresh water according to customer specs and also water storage up to 1MM+ gallons (with the space to add additional tanks as necessary). Truck trailer/ tanker washouts will be offered as an option as well.

#### **III.b. General Process Description: *WASTEWATER PLANT PROCESS***

Wastewater is transported to the water treatment facility by truck. Upon arrival, the bill of lading and truck manifests are inspected to ensure adherence to stringent compliance and data management requirements. Following review of the pertinent documentation, the truck's load of wastewater is unloaded for treatment via Clearwater Technologies' proprietary nine-step water treatment process:

**STEP 1:** Trucks unload water into one of two small 800-gallon grit chambers for the removal of large suspended solids down to 10 microns.

**STEP 2:** Water then moves through a 52,000-gallon API Separator tank for further clarification and removal of solids, as well as separation and collection of oils and other suspended hydrocarbons.

**STEP 3:** Water passes into a 30,000-gallon Break Tank.

**STEP 4:** Water then flows through a 160,000-gallon Dissolved Air Flotation (DAF) Tank where solids are "foamed" and skimmed off as solid waste.

**STEP 5:** Water is then pumped to the elevated 60,000-gallon Flotation Tank, where Hydrated Lime is added to the water to raise the pH to 12+, thereby causing the precipitation of dissolved iron and manganese.





**STEP 6:** Once the water has reached the required pH and been held for the required retention times, it flows into a 90,000-gallon Aeration Tank which acts as a catalyst for the precipitation of iron from the water.

**STEP 7:** The water then flows into one of two 400,000-gallon clarifiers where hydrochloric acid (HCL) is introduced to the water to lower the pH to a neutral condition.

**STEP 8:** Once the appropriate pH is achieved, the water is then directed to the last 60,000-gallon Equalization Tank where it is held prior to being sent to the truck filling station.

**STEP 9:** Treated water loaded from truck filling station into container truck for return to the customer.

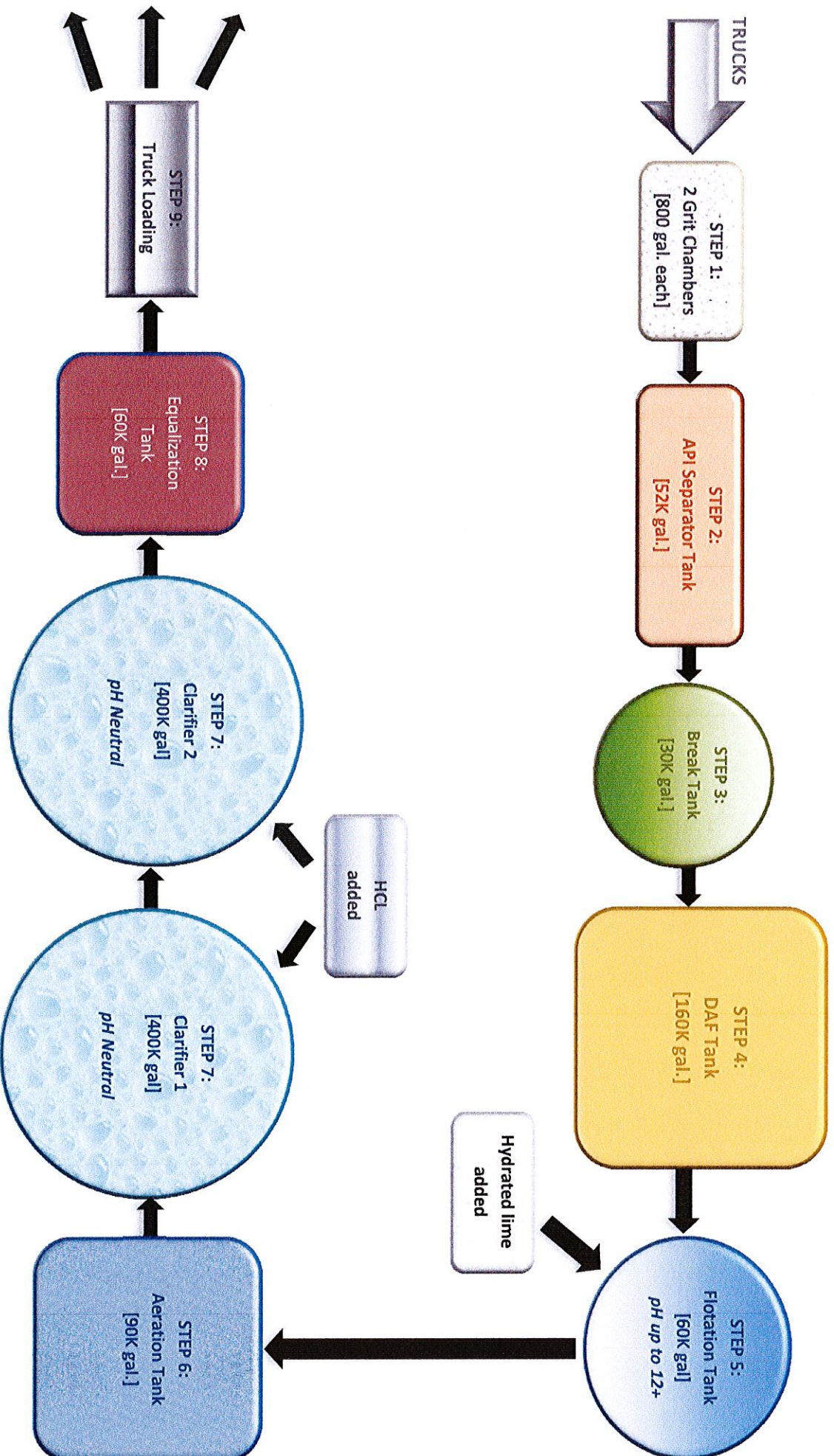
The aqueous sludge from the treatment process is discharged to the Sludge Press Feed Tank. The plate and frame presses will dewater the clarifier sludge, and the dry cake will be properly processed and sent to a landfill. Any waste oil removed in the API Separator Tank or the DAF Tank will be stored until either sold or properly disposed of.

### **III.c. General Process Flow Schematic *[refer to following page]***



## CLEARWATER TECHNOLOGIES LLC

# GENERAL PROCESS FLOW SCHEMATIC







**Clearwater Technologies LLC**  
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**III.d. Disclosure of Chemical Reagents and MSDS and Description of Their Function**

Refer to General Process Flow schematic on previous page (HCL and Hydrated Lime).

**IV. Estimated Volume of Materials to be Managed by the Facility Daily, Monthly and Annually**

The estimated volume of materials to be managed by the facility is 750K gallons per day over a 350-day year (262.5M gallons annually).

**V. Methods of Documenting the Type and Volume of Materials Received and Reused, and the Disposition of Materials From the Facility**

- Water flow samples are collected at discharge points.
- Inbound water is verified against bills of lading.
- Volumes are measured through calibrated Flow Meters/Totalizers at truck unloading and loading points.
- Water samples are periodically gathered at all truck loading points.

**NOTE: Any additional monitoring requirements as determined by the Ohio DNR will be incorporated as necessary as dictated by measuring frequency, sampling type and monitoring months.**





## Material Safety Data Sheet

### Section 1: PRODUCT AND COMPANY INFORMATION

**Product Name(s):** Lafarge Hydrated Lime

**Product Identifiers:** Hydrated Lime, Slaked Lime, Dolomitic Hydrated Lime, Lime, Caustic Lime, Lime Hydrate, Calcium Hydroxide, Calcium Dihydroxide, Calcium Magnesium Hydroxide, Type N Lime, Type S Lime

**Manufacturer:**

Lafarge North America Inc.  
12018 Sunrise Valley Drive, Suite 500  
Reston, VA 20191

**Information Telephone Number:**

703-480-3600 (9am to 5pm EST)

**Emergency Telephone Number:**

1-800-451-8346 (3E Hotline)

**Product Use:** Hydrated lime is used as an additive for mortar, cement, concrete and concrete products. It is also used in soil stabilization, as an anti-stripping agent in asphalt, for pH adjustment, and in other products that are widely used in construction.

**Note:** This MSDS covers many types of hydrated lime. Individual composition of hazardous constituents will vary between types of hydrated lime.






### Section 2: COMPOSITION/INFORMATION ON INGREDIENTS

Component	Percent (By Weight)	CAS Number	OSHA PEL -TWA (mg/m <sup>3</sup> )	ACGIH TLV-TWA (mg/m <sup>3</sup> )	LD <sub>50</sub> (mouse)	LC <sub>50</sub>
Calcium Hydroxide	50-95	1305-62-0	15 (T); 5 (R)	5 (T)	7300mg/kg, oral	NA
Magnesium Hydroxide	0-50	1309-42-8	NA	NA	8500mg/kg, oral	NA
Calcium Oxide	0-5	1305-78-8	5 (T)	2 (T)	3059 mg/kg, intraperitoneal	NA
Magnesium Oxide	0-5	1309-48-4	15 (T)	10 (T)	NA	NA
Calcium Carbonate*	0-3	1317-65-3	15 (T), 5 (R)	3 (R); 10 (T)	NA	NA
Crystalline Silica	0-1	14808-60-7	[(10) / (%SiO <sub>2</sub> +2)] (R); [(30) / (%SiO <sub>2</sub> +2)] (T)	0.025 (R)	NA	NA

**Note:** Exposure limits for components noted with an \* contain no asbestos and <1% crystalline silica

Hydrated lime is produced from the slow addition of water to crushed or ground quicklime (calcium oxide) which is produced by burning various forms of limestone. Trace amounts of chemicals may be detected during chemical analysis. For example, hydrated lime may contain trace amounts of iron oxide, aluminum oxide, fluoride compounds, and other trace compounds.

### Section 3: HAZARD IDENTIFICATION

WARNING		
	<p>Corrosive - Causes severe burns. Toxic - Harmful by inhalation. (Contains crystalline silica)</p>	
	<p>Use proper engineering controls, work practices, and personal protective equipment to prevent exposure to wet or dry product.</p> <p>Read MSDS for details.</p>	
	 Respiratory Protection	 Eye Protection
	 Waterproof Gloves	 Waterproof Boots



**Section 3: HAZARD IDENTIFICATION (continued)**

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**Emergency Overview:** Hydrated lime is a granular, white or grey, odorless powder. It is not combustible or explosive. A single, short-term exposure to the dry powder presents little or no hazard. Exposure of sufficient duration to hydrated lime can cause serious, potentially irreversible tissue (skin, eye, respiratory tract) damage due to chemical (caustic) burns, including third degree burns.

**Potential Health Effects:**

**Eye Contact:** Airborne dust may cause immediate or delayed irritation or inflammation. Eye contact with large amounts of dry powder or with wet hydrated lime can cause moderate eye irritation, chemical burns and blindness. Eye exposures require immediate first aid and medical attention to prevent significant damage to the eye.

**Skin Contact:** Hydrated lime may cause dry skin, discomfort, irritation, and severe burns.

Burns: Exposure of sufficient duration to wet hydrated lime, or to dry hydrated lime on moist areas of the body, can cause serious, potentially irreversible damage to skin, eye, respiratory and digestive tracts due to chemical (caustic) burns, including third degree burns. A skin exposure may be hazardous even if there is no pain or discomfort.

**Inhalation (acute):** Breathing dust may cause nose, throat or lung irritation, including choking, depending on the degree of exposure. Inhalation of high levels of dust can cause chemical burns to the nose, throat and lungs.

**Inhalation (chronic):** Risk of injury depends on duration and level of exposure.

Silicosis: This product contains crystalline silica. Prolonged or repeated inhalation of respirable crystalline silica from this product can cause silicosis, a seriously disabling and fatal lung disease. See Note to Physicians in Section 4 for further information.

Carcinogenicity: Hydrated lime is not listed as a carcinogen by IARC or NTP; however, hydrated lime contains trace amounts of crystalline silica which is classified by IARC and NTP as known human carcinogen.

Autoimmune Disease: Some studies show that exposure to respirable crystalline silica (without silicosis) or that the disease silicosis may be associated with the increased incidence of several autoimmune disorders such as scleroderma (thickening of the skin), systemic lupus erythematosus, rheumatoid arthritis and diseases affecting the kidneys.

Tuberculosis: Silicosis increases the risk of tuberculosis.

Renal Disease: Some studies show an increased incidence of chronic kidney disease and end-stage renal disease in workers exposed to respirable crystalline silica.

**Ingestion:** Do not ingest hydrated lime. Although ingestion of small quantities of hydrated lime is not known to be harmful, large quantities can cause chemical burns in the mouth, throat, stomach, and digestive tract.

**Medical Conditions Aggravated by Exposure:** Individuals with lung disease (e.g. bronchitis, emphysema, COPD, pulmonary disease) can be aggravated by exposure.

#### Section 4: FIRST AID MEASURES

- Eye Contact:** Rinse eyes thoroughly with water for at least 15 minutes, including under lids, to remove all particles. Seek medical attention for abrasions and burns.
- Skin Contact:** Wash with cool water and a pH neutral soap or a mild skin detergent. Seek medical attention for rash, burns, irritation, and prolonged unprotected exposures to wet hydrated lime, cement, cement mixtures or liquids from wet cement.
- Inhalation:** Move person to fresh air. Seek medical attention for discomfort or if coughing or other symptoms do not subside.
- Ingestion:** Do not induce vomiting. If conscious, have person drink plenty of water. Seek medical attention or contact poison control center immediately.
- Note to Physician:** The three types of silicosis include:
- Simple chronic silicosis – which results from long-term exposure (more than 20 years) to low amounts of respirable crystalline silica. Nodules of chronic inflammation and scarring provoked by the respirable crystalline silica form in the lungs and chest lymph nodes. This disease may feature breathlessness and may resemble chronic obstructive pulmonary disease (COPD).
  - Accelerated silicosis – occurs after exposure to larger amounts of respirable crystalline silica over a shorter period of time (5-15 years). Inflammation, scarring, and symptoms progress faster in accelerated silicosis than in simple silicosis.
  - Acute silicosis – results from short-term exposure to very large amounts of respirable crystalline silica. The lungs become very inflamed and may fill with fluid, causing severe shortness of breath and low blood oxygen levels.

Progressive massive fibrosis may occur in simple or accelerated silicosis, but is more common in the accelerated form. Progressive massive fibrosis results from severe scarring and leads to the destruction of normal lung structures.

#### Section 5: FIREFIGHTING MEASURES

<b>Flashpoint &amp; Method:</b>	Non-combustible	<b>Firefighting Equipment:</b>	Hydrated lime poses no fire-related hazard. A SCBA is recommended to limit exposures to combustion products when fighting any fire.
<b>General Hazard:</b>	Avoid breathing dust. Hydrated lime is caustic.		
<b>Extinguishing Media:</b>	Use extinguishing media appropriate for surrounding fire.	<b>Combustion Products:</b>	None.

#### Section 6: ACCIDENTAL RELEASE MEASURES

- General:** Place spilled material into a container. Avoid actions that cause the hydrated lime to become airborne. Avoid inhalation of hydrated lime and contact with skin. Wear appropriate protective equipment as described in Section 8. Scrape wet hydrated lime and place in container. Allow material to dry or solidify before disposal. Do not wash hydrated lime down sewage and drainage systems or into bodies of water (e.g. streams).
- Waste Disposal Method:** Dispose of hydrated lime according to Federal, State, Provincial and Local regulations.



## Section 7: HANDLING AND STORAGE

- General:** Keep bulk and bagged hydrated lime dry until used. Stack bagged material in a secure manner to prevent falling. Bagged material is heavy and poses risks such as sprains and strains to the back, arms, shoulders and legs during lifting and mixing. Handle with care and use appropriate control measures.
- Engulfment hazard. To prevent burial or suffocation, do not enter a confined space, such as a silo, bin, bulk truck, or other storage container or vessel that stores or contains hydrated lime. Hydrated lime can buildup or adhere to the walls of a confined space. The hydrated lime can release, collapse or fall unexpectedly.
- Usage:** Cutting, crushing or grinding hardened cement, concrete or other crystalline silica-bearing materials will release respirable crystalline silica. Use all appropriate measures of dust control or suppression, and Personal Protective Equipment (PPE) described in Section 8 below.
- Housekeeping:** Avoid actions that cause the hydrated lime to become airborne during clean-up such as dry sweeping or using compressed air. Use HEPA vacuum to clean-up dust. Use PPE described in Section 8 below.
- Storage Temperature:** Unlimited. **Storage Pressure:** Unlimited.
- Storage:** Store in a cool, dry and well ventilated location. Do not store near incompatible materials. Keep away from moisture. Do not store or ship in aluminum containers.
- Clothing:** Promptly remove and launder clothing that is dusty or wet with hydrated lime. Thoroughly wash skin after exposure to dust or wet hydrated lime.

## Section 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

- Engineering Controls:** Use local exhaust or general dilution ventilation or other suppression methods to maintain dust levels below exposure limits.

### Personal Protective Equipment (PPE):

- Respiratory Protection:** Under ordinary conditions no respiratory protection is required. Wear a NIOSH approved respirator that is properly fitted and is in good condition when exposed to dust above exposure limits.
- Eye Protection:** Wear ANSI approved glasses or safety goggles when handling dust or wet hydrated lime to prevent contact with eyes. Wearing contact lenses when using hydrated lime, under dusty conditions, is not recommended.
- Skin Protection:** Wear gloves, boot covers and protective clothing impervious to water to prevent skin contact. Do not rely on barrier creams, in place of impervious gloves. Remove clothing and protective equipment that becomes saturated with wet hydrated lime and immediately wash exposed areas.

## Section 9: PHYSICAL AND CHEMICAL PROPERTIES

- |                          |                       |                             |              |
|--------------------------|-----------------------|-----------------------------|--------------|
| <b>Physical State:</b>   | Solid (powder).       | <b>Evaporation Rate:</b>    | NA.          |
| <b>Appearance:</b>       | White or grey powder. | <b>pH (in water):</b>       | 12-13        |
| <b>Odor:</b>             | None.                 | <b>Boiling Point:</b>       | >1000° C     |
| <b>Vapor Pressure:</b>   | NA.                   | <b>Freezing Point:</b>      | None, solid. |
| <b>Vapor Density:</b>    | NA.                   | <b>Viscosity:</b>           | None, solid. |
| <b>Specific Gravity:</b> | 2-3                   | <b>Solubility in Water:</b> | Negligible   |

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**Section 10: STABILITY AND REACTIVITY**

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**Stability:** Stable, but reacts slowly with carbon dioxide to form calcium and magnesium carbonate. Keep dry until use. Hydrated lime may react with water, resulting in a slight release of heat, depending on the amount of lime (Calcium oxide) present. Avoid contact with incompatible materials.

**Incompatibility:** Wet hydrated lime and cement is alkaline and is incompatible with acids, ammonium salts and aluminum metal. Hydrated lime and cement dissolves in hydrofluoric acid, producing corrosive silicon tetrafluoride gas. Hydrated lime and cement reacts with water to form silicates and calcium hydroxide. Silicates react with powerful oxidizers such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride.

**Hazardous Polymerization:** None.

**Hazardous Decomposition:** Hydrated lime will decompose at 540°C to produce calcium oxide (quicklime), magnesium oxide, and water.

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**Section 11 and 12: TOXICOLOGICAL AND ECOLOGICAL INFORMATION**

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For questions regarding toxicological and ecological information refer to contact information in Section 1.

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**Section 13: DISPOSAL CONSIDERATIONS**

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Dispose of waste and containers in compliance with applicable Federal, State, Provincial and Local regulations.

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**Section 14: TRANSPORT INFORMATION**

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This product is not classified as a Hazardous Material under U.S. DOT or Canadian TDG regulations.

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**Section 15: REGULATORY INFORMATION**

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**OSHA/MSHA Hazard Communication:** This product is considered by OSHA/MSHA to be a hazardous chemical and should be included in the employer's hazard communication program.

**CERCLA/SUPERFUND:** This product is not listed as a CERCLA hazardous substance.

**EPCRA  
SARA Title III:** This product has been reviewed according to the EPA Hazard Categories promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 and is considered a hazardous chemical and a delayed health hazard.

**EPCRA  
SARA Section 313:** This product contains none of the substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

**RCRA:** If discarded in its purchased form, this product would not be a hazardous waste either by listing or characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste.

**TSCA:** Hydrated lime and crystalline silica are exempt from reporting under the inventory update rule.

**California  
Proposition 65:** Crystalline silica (airborne particulates of respirable size) is known by the State of California to cause cancer.



## Section 15: REGULATORY INFORMATION (continued)

### WHMIS/DSL:



Products containing crystalline silica and calcium carbonate are classified as D2A, E and are subject to WHMIS requirements.

## Section 16: OTHER INFORMATION

### Abbreviations:

>	Greater than	NA	Not Applicable
ACGIH	American Conference of Governmental Industrial Hygienists	NFPA	National Fire Protection Association
CAS No	Chemical Abstract Service number	NIOSH	National Institute for Occupational Safety and Health
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act	NTP	National Toxicology Program
		OSHA	Occupational Safety and Health Administration
CFR	Code for Federal Regulations	PEL	Permissible Exposure Limit
CL	Ceiling Limit	pH	Negative log of hydrogen ion
DOT	U.S. Department of Transportation	PPE	Personal Protective Equipment
EST	Eastern Standard Time	R	Respirable Particulate
HEPA	High-Efficiency Particulate Air	RCRA	Resource Conservation and Recovery Act
HMIS	Hazardous Materials Identification System	SARA	Superfund Amendments and Reauthorization Act
IARC	International Agency for Research on Cancer	T	Total Particulate
		TDG	Transportation of Dangerous Goods
LC <sub>50</sub>	Lethal Concentration	TLV	Threshold Limit Value
LD <sub>50</sub>	Lethal Dose	TWA	Time Weighted Average (8 hour)
mg/m <sup>3</sup>	Milligrams per cubic meter	WHMIS	Workplace Hazardous Materials Information System
MSHA	Mine Safety and Health Administration		

This MSDS (Sections 1-16) was revised on March 1, 2011.

An electronic version of this MSDS is available at: [www.lafarge-na.com](http://www.lafarge-na.com) under the Sustainability section.

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



## MATERIAL SAFETY DATA SHEET (HYDROCHLORIC ACID)

### VIII. EXPOSURE CONTROLS AND PROTECTION

Ventilation: Use only in well-ventilated areas.

Protective Equipment for the eyes and skin :

Splash proof and face shield goggles, disposable latex/ rubber apron, PVC rain suit, rubber boots with pant legs over boots.

Respiratory Protection Requirements: NIOSH/MSHA approved respirator should be used.

Precautionary Hygiene/control measures :

Avoid contact with skin, eyes, and clothing. Do not breathe mist or vapor. Wash thoroughly after handling. Safety showers and eye wash fountains should be available in storage and handling area. Any protective clothing contaminated with hydrochloric acid should be removed immediately and thoroughly laundered before wearing again.

### IX. PHYSICAL AND CHEMICAL PROPERTIES

STATE : fuming liquid  
APPEARANCE : colorless to slightly yellow  
ODOR : Irritating  
pH : Strong acid <1  
BOILING POINT : 85° C  
FLASH POINT : Not determined  
SPECIFIC GRAVITY : 1.150 -1.164  
VAPOR PRESSURE : 20 hPa @ 20° C  
SOLUBILITY IN : WATER: miscible, BASE : miscible

### X. STABILITY AND REACTIVITY

Stability : Stable under normal handling conditions.

Hazardous polymerization will not occur.

Hazardous decomposition product: HCl gas will not decompose.

Materials and conditions to avoid (incompatibility) are:

Avoid high temperatures. Containers may burst. Corrosive to most metals, concrete, some plastics, some rubber and coatings. Fumes forms droplets which settle and promote corrosion of metals and unprotected equipment. Mixing with strong acids can cause evolution of hydrogen chloride gas. Oxidizing agents will cause the release of toxic chlorine gas. Contact of liquid acid or gas with alkali or active metal may develop enough heat to cause fire in adjacent combustible material.

### XI. TOXICOLOGICAL INFORMATION

Reproductive Effects: No data available

MUTAGENICITY : Not applicable

CANCER INFORMATION : Not applicable

### XII. ECOLOGICAL INFORMATION

ECOTOXICITY DATA: High acidity may pose potential hazard to plant and marine life.

WATER-POLLUTION RISK CLASSIFICATION: Slightly water-polluting substance.

### XIII. DISPOSAL CONSIDERATIONS

Dispose of in accordance with all Government and Local regulations.

### XIV. TRANSPORT INFORMATION

Transportation of Dangerous Goods

TDG Classification: Do not ship by air.

DOT Hazard Classification: Class 8 : Corrosive: Group II

DOT Shipping Name : Hydrochloric acid ID: UN 1789

### XV. REGULATORY INFORMATION

No data available

### XVI. OTHER INFORMATION

This MSDS contains information under the sixteen (16) section headings required by ISO 11014 "Safety Data Sheet for Chemical Products".

THE INFORMATION CONTAINED HEREIN IS PRESENTED IN GOOD FAITH AND BELIEVED TO CORRECT AS OF THE DATE OF ISSUE. HOWEVER, NO WARRANTY, EXPRESS OR IMPLIED IS GIVEN BY MABUHAY VINYL CORPORATION REGARDING THE USE OF THIS MATERIAL SAFETY DATA SHEET (MSDS).





## MATERIAL SAFETY DATA SHEET (HYDROCHLORIC ACID)

### I. PRODUCT IDENTIFICATION

Chemical Name : Hydrochloric Acid  
Trade Name : Technical Grade Muriatic Acid  
Synonyms : Muriatic Acid, Spirit of Salts

### II. COMPOSITION / INGREDIENTS

Hydrochloric Acid, % : 32 – 34 % by weight  
Chemical Formula : HCl  
Molecular Weight : 36.46 g/mole  
CAS Registry No. : 7647-01-0

### III. HAZARDS IDENTIFICATION

THIS PRODUCT MAY BE : corrosive, toxic and a major potential hazard upon contact to skin, eyes and respiratory tract.

#### TOXICITY ROUTES OF EXPOSURE :

**Ingestion** can cause severe burns of the mucous membranes of the mouth, esophagus and stomach; pain, nausea and vomiting may also occur.

**Inhalation** causes irritation of the upper respiratory tract resulting in cough, burning of the throat and choking sensation.

**Skin contact** to a high concentration of the HCl gas or liquid may cause burns; repeated or prolonged exposures to dilute solutions may cause dermatitis.

**Eye exposure** to high concentration of the acid can cause eye irritation to severe destruction like prolonged or permanent visual impairment, including blindness. These effects occur rapidly affecting all parts of the eye. Mist can also cause irritation to destructive burns.

#### OVEREXPOSURE :

Can cause serious damage to all body tissues contacted.

#### MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:

Fumes may aggravate eye, skin or respiratory conditions. Effects are usually limited to inflammation and occasionally ulceration of the nose, throat and larynx, if inhaled deeply, pulmonary edema may occur.

### IV. FIRST AID MEASURES

**SKIN** : Remove contaminated clothing and immediately wash skin for a minimum of 15 minutes. Call or see a physician.

**EYES** : Immediately flush eyes with large amount of water. Occasionally lifting the upper and lower eyelids and rotating the eyeballs. Continue flushing for a minimum of 15 minutes. Call a physician.

**INHALATION** : Remove to fresh air. If breathing stops, administer artificial respiration. Call a physician.

**INGESTION** : DO NOT induce vomiting. Rinse or wash mouth with water. If person is conscious, give 2 or more glasses of water. If unconscious, never give anything by mouth. See a physician immediately.

### V. FIRE FIGHTING MEASURES

Autoignition Point : Not Applicable

Flash Point : Not Applicable

Flammability/Explosive limits : Not Applicable

**Fire/Explosion Hazards:** Emits toxic and choking fumes of hydrogen chloride. Hydrochloric acid is not flammable but flammable and explosive hydrogen gas may be formed on contact with metals.

**Fire Prevention/ Extinguishing Media** : Not Applicable

### VI. ACCIDENTAL RELEASE MEASURES

#### IN CASE OF SPILL OR RELEASE :

Move people from the area. Move upwind. Avoid contact with acid. Stop leaks if safe to do so. Reposition container if this will reduce or stop leakage. If leak continues, remove leaking container from vehicle or move other materials from vehicle away from container. Absorb spill with sand or earth. If available, cover the spill with excess soda ash, lime or sodium bicarbonate, otherwise, wash away with large amounts of water. Scoop slurry to plastic drums. If leak cannot be safely stopped or if contents cannot be safely transferred to a sound container, contact fire brigade.

### VII. HANDLING AND STORAGE

**Storage Requirements:** Keep container tightly closed.

**FOR SMALL VOLUMES** : Maybe stored in plastic jugs, carboys, and plastic drums.

**FOR LARGE VOLUMES** : Store in rubber-lined or epoxy lined steel storage tanks or fiber glass reinforced polyester (FRP) tanks.

**Incompatible Materials:** Store away from heat

**Use Instructions:** Wear suitable protective clothing, gloves and eye/face protection. In case of insufficient ventilation, wear suitable respiratory equipment.



Clearwater Technologies, LLC  
Radiological Response Action Plan  
November 2012  
*Revision 2: Update for Yorkville, OH—October 17, 2014*

**Clearwater Technologies, LLC**

# ***Radiological Response Action Plan***

Prepared by:  
**Applied Health Physics, Inc.**  
November 2012  
*(Updated October 17, 2014)*



## **Background**

The Clearwater Technologies, LLC facility located in Yorkville, Ohio is designed to support the processing and storage of waters from oil and gas-related drilling projects. These projects could include drilling activities for both Marcellus and conventional wells. The water processing is limited to mixing and settling as described in supporting documentation. The use of these waters at drilling sites could potentially disturb the geological make-up of the sub-surface soils and rock formations and expose the water to both *naturally occurring radioactive material* (NORM) and/or *technically enhanced naturally occurring radioactive material* (TENORM). Definitions of NORM and TENORM can be found in Ohio Department of Health, Bureau of Radiation Protection guidance document. The water shall arrive at the Clearwater Technologies, LLC facility via commercial trucks or pipeline.

The intent of regulatory oversight and enforcement, including that of both NORM and TENORM, is to ensure the protection of Clearwater Technologies, LLC employees, contractors, the public health and safety as well as the environment. Clearwater Technologies, LLC shall conduct operations at their facility in Yorkville, Ohio will conduct operations under the terms of their OH DNR-issued permit and in compliance with all requirements as specified by Health and Safety-related Ohio governmental entities, including but not limited to the Ohio Department of Health, Bureau of Radiation Protection.

Although the anticipated radiation exposures associated with that water will be low level, the volume of truck traffic mandates that Clearwater Technologies, LLC install and use fixed radiation detection systems at their facilities. In addition, any vehicles identified as exceeding the Action Level I limits will be hand-scanned with a calibrated Ludlum Measurements Model 19 or equivalent. This instrument has a maximum range of 5 mR/hour (5000 µR/hour) and is capable of monitoring anticipated background radiation levels at the site. Clearwater Technologies, LLC shall have access to additional survey instruments for higher range radiation and contamination surveys as necessary.

## **Policy Statement**

It is Clearwater Technologies, LLC's policy that all vehicles containing drilling- impacted waters shall be screened for radiation 10 percent of the time upon entry to the Clearwater Technologies, LLC facility. It is Clearwater Technologies, LLC's policy not to knowingly accept any inbound vehicle containing drilling-impacted waters exhibiting radiation levels that exceed 10 µR/hour above natural background levels. In addition, only individuals trained in the use of portable radiation detection equipment and this Action Plan shall provide response.

If incoming shipments are identified as emitting radiation levels in excess of 10 µR/hour above natural background, Clearwater Technologies, LLC management personnel and responsible individuals are to follow the applicable safe operating procedures contained in this plan.

Clearwater Technologies, LLC personnel shall investigate each radiological situation thoroughly, take appropriate radiation measurements with a hand-held survey meter, complete the required documentation and make notifications as required. The Facilities Manager or designee will make the final decision to reject any materials due to a radiological issue only after receiving permission from the OH DNR and/or Ohio Department of Health, Bureau of Radiation





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Protection. Any rejected shipments containing suspect material will not be permitted to exit Clearwater Technologies, LLC property until written authorization has been received from the appropriate Ohio authority.

All individuals involved in performing surveys and/or responding to emergencies involving radiation shall be trained in radiation safety and detection. The training shall include classroom lecture and demonstration as well as recognizing the radiation caution symbol. Radiation surveys of levels in excess of 2,000  $\mu\text{R}/\text{hour}$  shall be performed by a radiological consultant or appropriate Ohio radiological authority/ representative as necessary and/or appropriate.

Any proposed revisions to the approved Clearwater Technologies, LLC Action Plan shall be submitted to the Ohio Department of Health, Bureau of Radiation Protection for review and approval prior to implementation.

## **RADIATION DETECTION EQUIPMENT**

Clearwater Technologies, LLC shall install and use a fixed position radiation detection system capable of measuring environmental radiation levels and designed to alarm as a minimum at 10  $\mu\text{R}/\text{hour}$  above natural background levels. The fixed position detectors shall be located at the inbound scales to ensure minimal vehicle speed. In addition, the facility shall maintain a handheld instrument such as the Ludlum Model 19 or equivalent for assessing suspect vehicles and loads. Both of these instruments are designed to measure environmental levels of gamma and x-ray radiations.

A typical natural background radiation level at the facility would average between 4 and 15  $\mu\text{R}/\text{hour}$ .

The fixed position detection system shall be calibrated at least annually by determining the distance from a NIST traceable source producing 10  $\mu\text{R}/\text{hour}$  above natural background then confirming that the system will alarm at that distance. The handheld instrument shall be calibrated by a properly licensed facility at a frequency not to exceed annually. The calibration shall include electronic pulsing of lower ranges and gamma radiation testing for higher ranges. The results of the calibration shall not exceed +/- 20% of the calibration source value and the certificate of calibration retained for at least five years.

Operators shall ensure the proper operation of the instruments as described in the Safe Operating Procedure. If any of the operational checks fail the instruments shall be taken out of service.

Clearwater Technologies, LLC shall have access to additional survey meters to include:

- High range beta/gamma survey meters
- Removable contamination survey meters
- Portable gamma spectroscopy detector
- Back-up  $\mu\text{R}$  survey meter

These meters shall be provided by the radiological consultant.



## **ACTION LEVELS**

The Ohio Department of Health, Bureau of Radiation Protection identifies Action Levels and provides steps to be taken if the presence of radioactive material has been confirmed.

### **Action Level #1**

If the measured radiation levels at 5 centimeters (2 in.) from the vehicle exceed 10  $\mu\text{R}/\text{hour}$  above the documented natural background reading the following actions are to be taken:

- 1) Continue to survey vehicle levels and document highest result up to 2,000  $\mu\text{R}/\text{hour}$  above background. Any reading in excess of 2,000  $\mu\text{R}/\text{hour}$  above background constitutes an Action Level #2 situation.
- 2) Do not allow the vehicle to leave the facility without the permission of the Ohio Department of Health, Bureau of Radiation Protection.
- 3) Contact Clearwater Technologies, LLC emergency personnel for guidance. Follow the Safe Operating Procedure.
- 3) Clearwater Technologies, LLC management shall contact the Ohio Department of Health, Bureau of Radiation Protection for guidance.

### **Action Level #2**

If the measured radiation level at 5 cm from the surface of the vehicle is equal to or greater than 2,000  $\mu\text{R}/\text{hour}$  or the radiation level in the cab of the truck is greater than 2000  $\mu\text{R}/\text{hour}$  the following steps should be taken:

- 1) Remove all personnel from the vehicle and complete a survey of occupants for the possibility of nuclear medicine testing or treatment.
- 2) If occupants are the cause of the elevated readings have them moved to a safe distance from the vehicle (25 feet) and re-survey the vehicle.
- 3) If the radiation levels are confirmed as less than 10  $\mu\text{R}/\text{hour}$  above the documented natural background reading allow the vehicle to enter the facility.
- 4) If the measured radiation levels still exceed greater than 2000  $\mu\text{R}/\text{hour}$  the following steps should be taken:
  - Move the vehicle to the designated isolation zone
  - Erect a physical barrier to keep all personnel at least 10' from the vehicle
  - Notify Clearwater Technologies, LLC emergency contacts immediately
- 5) Clearwater Technologies, LLC management shall notify the Ohio Department of Health, Bureau of Radiation Protection for further direction.





## Safe Operating Procedure For Responding Personnel

All personnel involved in radiological screening are required to follow this SOP when the fixed position radiation detection system alarms:

1. Obtain the appropriate radiation survey meter (Ludlum Model 19) and verify the following:
  - Ensure that the instrument has been calibrated within the last twelve months with an NIST traceable Cs-137 source.
  - Ensure that the battery check is satisfactory (if low, change the batteries)
  - Ensure that the meter is not physically damaged
  - Ensure that the meter responds to the appropriate check source
  - Return the check source to it's secure storage location

### DO NOT USE SURVEY INSTRUMENTS THAT FAIL ANY OF THE ABOVE CHECKS

2. Obtain an initial background radiation measurement before surveying the vehicle. The selector switch should be on 25 and the reading should not exceed 15  $\mu\text{R}/\text{hour}$  (red numbers).
3. Approach the vehicle slowly with the meter set on the 25 scale.
4. Perform the radiation survey at 5 cm (2") from the surface of the vehicle, slowly monitoring both sides and the rear.

IF	THEN
The radiation level does not exceed 10 $\mu\text{R}/\text{hour}$ above natural background	<ul style="list-style-type: none"> <li>• Complete appropriate form and allow the vehicle to proceed</li> </ul>

IF	THEN
The radiation level exceeds 10 $\mu\text{R}/\text{hour}$ above natural background this constitutes Action Level I	<ul style="list-style-type: none"> <li>• Check the driver for nuclear medicine testing</li> <li>• Continue to monitor the vehicle (upscaling as necessary) and verify the highest surface reading (do not enter field in excess of 2,000 <math>\mu\text{R}/\text{hour}</math>),</li> <li>• Document the results on the appropriate Form</li> <li>• Make immediate notification as required</li> </ul>

IF	THEN
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The radiation level exceeds 2000 uR/hour in the cab of the vehicle or at the external surface this could constitute an Action Level II	<ul style="list-style-type: none"> <li>• <b>HALT IMMEDIATELY</b></li> <li>• <b>Isolate the vehicle</b></li> <li>• <b>Estimate distance from highest reading to vehicle surface</b></li> <li>• Perform immediate notifications as required</li> </ul>
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5. If radiation levels are in excess of 2000  $\mu$ R/hr in the cab or at 5 centimeters, the vehicle must be isolated away from employee work or traffic areas. The vehicle must be barricaded at 2000  $\mu$ R/hr and posted as a "Restricted Area" until authorization is given for disposition.
6. Any rejected vehicles will not be permitted to exit company property until written authorization is provided by the Ohio Department of Health, Bureau of Radiation Protection. In the event that the driver leaves the facility with the vehicle prior to Ohio Department of Health, Bureau of Radiation Protection approval, Clearwater Technologies, LLC management shall notify the OH State Police and provide a full description of the vehicle.
7. Maintain a copy of all completed forms and forward copies to responsible individuals.
8. The following personnel are to be notified of all radiological issues involving elevated measurements:

Name	Phone #
Mike Kovalski	(304) 312-0259

### Additional Notifications

9. Notify the following:
 

Applied Health Physics, Inc.   Todd Mobley                      800-332-6648
10. The consultant (Applied Health Physics) shall be responsible for the following:
  - A. Immediate notification of the Ohio Department of Health, Bureau of Radiation Protection
  - B. Responding to the facility within 8 hours of Emergency Notification
  - C. Performing a comprehensive radiation and contamination survey
  - D. Determining Isotopic identification for characterization of the material
  - E. Confirming the Ohio Department of Health, Bureau of Radiation Protection Action Level and appropriate response
  - F. Make recommendation on Ohio Department of Health, Bureau of Radiation Protection notification

### Training of Response Personnel

All individuals involved in the screening of vehicles for radiation shall receive training prior to





assignment of that responsibility. The training shall be in the form of a lecture/ demonstration and include as a minimum the following:

- Radiation Fundamentals
- Methods of Minimizing Exposure (ALARA)
- Recognizing the radiation caution symbol
- Fixed Detection Equipment
- Portable Detection Equipment
- Units of Measurement
- Proper Survey Techniques
- Action Plan Content
- Standard Operating Procedure
- Residual waste sampling and handling
- Documentation Completion and Record-keeping
- Notification Requirements

### **Rejection of Vehicles**

As previously stated, Clearwater Technologies, LLC shall not accept the contents of any vehicle emitting radiation levels in excess of 10  $\mu$ R/hour above natural background. The vehicle shall be isolated and Clearwater Technologies, LLC emergency responders notified.

Notifications to the Ohio Department of Health, Bureau of Radiation Protection shall be made as necessary and the vehicle shall remain onsite until a signed exemption form is received from them.

In the event that a vehicle exits the site prior to Ohio Department of Health, Bureau of Radiation Protection authorization, Clearwater Technologies, LLC, shall notify the OH State Police and the DEP immediately.

### **Equipment Surveys**

In accordance with Ohio Department of Health, Bureau of Radiation Protection guidance, Clearwater Technologies, LLC shall routinely perform radiation surveys of equipment used for the process or storage of waters associated with sub-surface drilling activities. The surveys shall be completed annually or at a frequency acceptable to the Ohio Department of Health, Bureau of Radiation Protection. The results of surveys shall be documented and available for regulatory review. A copy of a draft spread sheet is included in the Appendix.

### **Liquid/Sludge Disposal**

The potential exists for the need for disposal of residual wastes as liquid or solids. These wastes could be generated from tank or other equipment clean-out. During tank cleaning and removal of sludge and residual solids a contract qualified Health Physicist shall be present to monitor the interior of the tank for TENORM particulates. OSHA regulations for any confined space entry shall apply. The results of the monitoring shall be maintained and available upon request from the Department. Prior to transfer or transport for disposal the Clearwater Technologies, LLC management representative shall ensure that radiological analysis has been completed in accordance with the completed Form U request. Clearwater Technologies, LLC management shall coordinate with the Ohio Department of Health, Bureau of Radiation Protection solid waste manager or appropriate contact for guidance on sampling, analysis and review of the results.



## **Employee Exposure**

It is expected that radiation exposures to Clearwater Technologies, LLC employees will not exceed Ohio Department of Health, Bureau of Radiation Protection limits for members of the general public. In the event of an actual or suspected exposure in excess of those limits (100 mR/year) Clearwater Technologies, LLC management shall immediately contact Ohio Department of Health, Bureau of Radiation Protection and the professional consultant. The consultant shall perform and document a dose assessment for all individuals involved.

## **Documentation**

Clearwater Technologies, LLC shall complete all documentation as required and maintain records for inspection by the Ohio Department of Health, Bureau of Radiation Protection and include this information in both the daily operational records and the annual report.

## **Action Plan Revision**

Any proposed revisions to the approved Clearwater Technologies, LLC Action Plan shall be submitted to the Ohio Department of Health, Bureau of Radiation Protection for review and approval prior to implementation.

## **EMERGENCY CONTACTS**

<b>Organization</b>	<b>Contact</b>	<b>Phone #</b>
Applied Health Physics	Todd Mobley	800-332-6648 (office) 412-580-5235 (cell)
OHIO DEPARTMENT OF HEALTH, BUREAU OF RADIATION PROTECTION	Radiation Protection	570-327-3636
OH DNR	Beth Pratt	(614) 265-6905
OH Fire Station	Yorkville Fire Department	(740) 859-2585
OH Hospital	East Ohio Regional Hospital	(740) 859-2171

## **Action Plan Preparation**

This Action Plan was prepared by Todd Mobley of Applied Health Physics, Inc. Mr. Mobley has over 33 years of experience in radiation safety. A copy of his resume is available upon request.



## APPENDIX A

### CLEARWATER TECHNOLOGIES, LLC RADIATION INCIDENT RESPONSE REPORT

1. Incident Date \_\_\_\_\_ Time \_\_\_\_\_  
Location of Isolated Truck \_\_\_\_\_
- 2A. Obtain Vehicle Identification:
- Transporter Name \_\_\_\_\_
  - Radiation Level \_\_\_\_\_ (uR/hour) of Isolated Car
  - Driver Name \_\_\_\_\_
- 2B. Generator/ Manifest # \_\_\_\_\_
- Contact \_\_\_\_\_
  - Address \_\_\_\_\_
  - Phone \_\_\_\_\_ Fax \_\_\_\_\_
- 3A. Type of Vehicle: \_\_\_\_\_
- 3B. Commodity in Vehicle: \_\_\_\_\_
4. Comments:
5. Incident results recorded in the Daily Operational Log: Yes / No

Signature \_\_\_\_\_  
( )





## APPENDIX B

### ANNUAL EQUIPMENT SURVEY FORM

Date	Equipment ID	Survey Meter S/N	Calib. Due	Max. Radiation	Name



## APPENDIX C

### INBOUND VEHICLE SURVEY LOG

Date	Vehicle ID	Company	Commodity	Survey Results > 10 μR/hr Above Background	Surveyor

