

*Office of Environmental Management – Grand Junction*



# Crescent Junction Project Site Fugitive Dust Control Plan

July 2006



U.S. Department  
of Energy

## **Office of Environmental Management**

**Moab UMTRA Project**

**Crescent Junction Site**

**Fugitive Dust Control Plan**

July 2006

Work Performed by S.M. Stoller Corporation under DOE Contract No. DE-AC01-02GJ79491  
for the U.S. Department of Energy Office of Environmental Management, Grand Junction,  
Colorado

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## 1.0 Introduction

The State of Utah Division of Air Quality rules for the control of fugitive dust and emissions require that all sources whose activities or equipment have the potential to produce fugitive or airborne dust must prepare and implement a Fugitive Dust Control Plan. Accordingly, this Fugitive Dust Control Plan (Plan) addresses the control of fugitive and airborne dust emissions from the Crescent Junction Site of the Moab, Utah, Uranium Mill Tailings Remedial Action (UMTRA) Project, located approximately 1.5 miles northeast of Crescent Junction, Utah. Specifically, this Plan complies with the State of Utah rules for controlling fugitive dust emissions as specified in the *Utah Administrative Code* (U.A.C.) R307-309, “Fugitive Emission and Fugitive Dust Rule.”

This Plan has been prepared to address activities and operations conducted by the U.S. Department of Energy (DOE) to construct a disposal cell and emplace uranium mill tailings at the Crescent Junction Site. The primary objective of this plan is to formulate a strategy for controlling, to the greatest extent practicable, fugitive or airborne dust emissions at the Crescent Junction Site. This will be accomplished by identifying specific sources and activities that have the highest potential to produce or generate fugitive or airborne dust emissions. This plan presents the engineering controls necessary to minimize and control dust emissions from those sources and activities. As necessary, the scope of this plan will be revised to reflect changes in DOE’s dust control strategy as site conditions or activities change.

### 1.1 Site Location

The Crescent Junction Disposal Site is located approximately 1.5 miles east of the intersection of U.S. Highway 191 (US-191) and Interstate 70 (I-70) and north of the Union Pacific Railroad. It is about 30 miles north of Moab, 20 miles east of Green River, and approximately 6 miles west of Thompson Springs (see [Figure 1-1](#)).

The disposal site is located within portions of Sections 26 and 27, T21S, R19E, Salt Lake Principal Meridian (SLPM) (see [Figure 1-2](#)). The majority of the area that will be used for the repository and site activities is in the NE1/4 of Section 27 and NW1/4 of Section 26; a portion of the cell will extend into Sections 22 and 23.

DOE withdrew land from the U.S. Bureau of Land Management (BLM) for a mill tailings and contaminated material repository and ancillary facilities (e.g., construction management trailers, parking, vehicle wash, construction water pond). An estimated 400 acres will be impacted by disposal activities. Once the disposal cell is completed, DOE will retain permanent ownership of the repository, a buffer area, and access to the repository; the remaining acreage will be returned to the BLM. The area that will be permanently withdrawn from other uses is approximately 200 acres.

The Crescent Junction Disposal Site is surrounded on three sides by land administered by BLM. The talus slopes of the Book Cliffs delineate the northern boundary. To the east and west, the surrounding areas are basically flat, and drainage is generally to the south and west toward the Green River. To the south, the Union Pacific Railroad bounds the property. Farther south is County Road 175 (CR-175) and I-70. There are no active commercial establishments present in the immediate area. The former Crescent Junction gas station and restaurant, now vacated, are located approximately 1.5 miles southwest of the site at the interchange of I-70 and US-191.

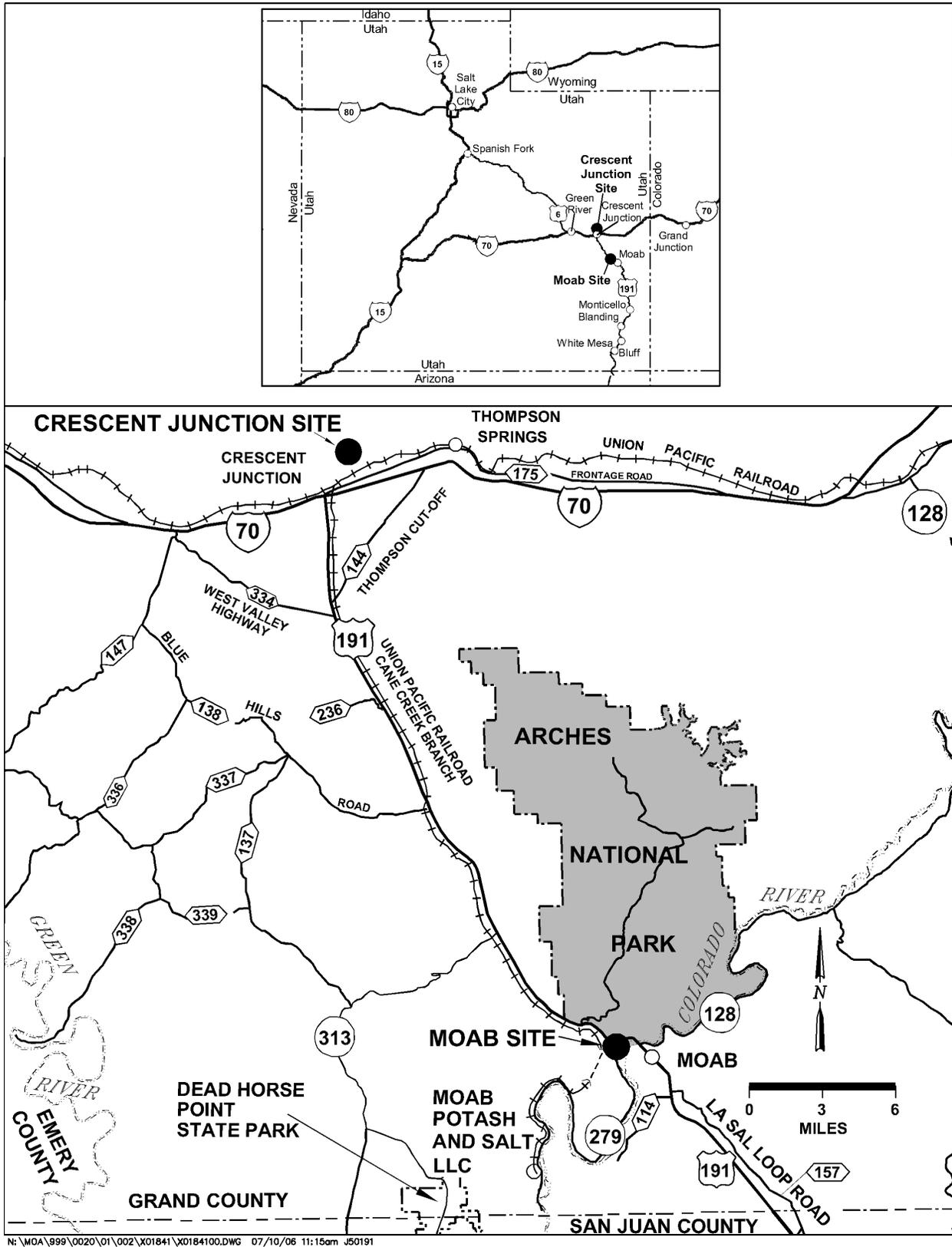


Figure 1-1. Location of Crescent Junction Disposal Site

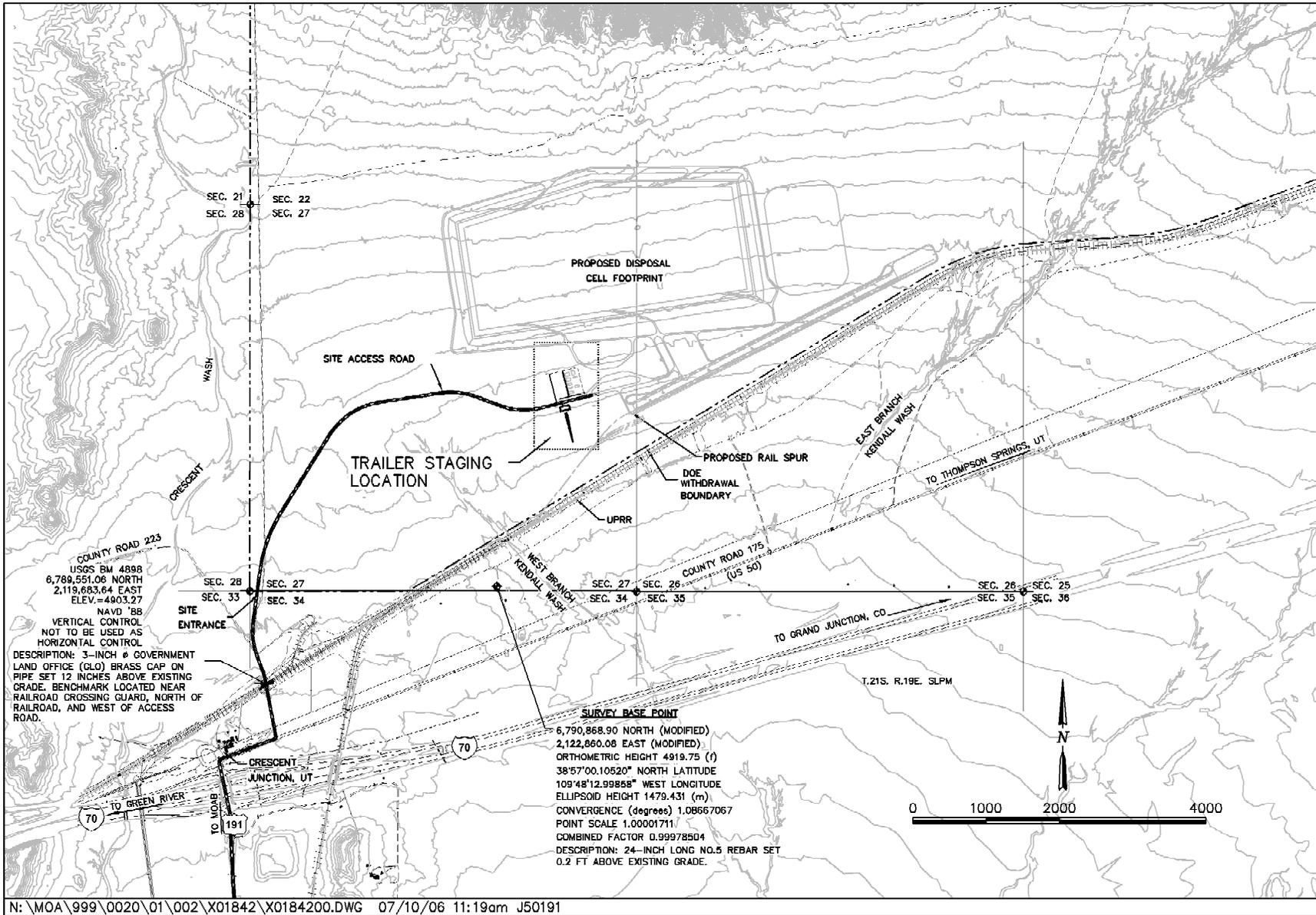


Figure 1-2. Site Map

One residence is located approximately 0.25 mile south of I-70. Thompson Springs, approximately 6 miles to the east, has fewer than 50 full time residents. No rivers or major drainages are present on the withdrawn disposal site property.

## **1.2 Site History**

The Crescent Junction Disposal Site area was historically public land administered by the BLM. It contains a cattle grazing allotment that is currently used and oil and gas leases that are undeveloped. BLM has designated the area as access limited to existing roads. The general area is used by wildlife for forage, nesting, and hunting by various raptors and as a wildlife migratory corridor. Prairie dogs, raptors, bighorn sheep, antelope, chukars, and a variety of small mammals and birds (e.g., antelope squirrel, horned lark) remain in the area part of the year or migrate through the area.

The Crescent Junction location was identified as a disposal site during the Environmental Impact Statement and Record of Decision process in 2005. Ownership and responsibility of the mill tailings at the Moab Site were transferred to DOE by passage of the Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001 (Public Law 106-398). This act further designates that the Moab Site undergo remediation in accordance with Title I of the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA; 42 U.S.C. 7912, as amended).

## **1.3 Purpose and Need**

Contaminated materials associated with the former Atlas Minerals Mill at the Moab UMTRA Site will be transported to the Crescent Junction Disposal Site and placed in a repository that will be secure from human intrusion. This action will result in the removal of tailings materials at the existing tailings pile, all surface contamination, and contamination from vicinity properties, totaling approximately 12 million cubic yards (16 million tons) of contaminated materials.

The majority of contaminated materials will be transported from the Moab UMTRA Project Site in containers by rail over the existing Cane Creek Branch of the Union Pacific Railroad. The containers will be offloaded adjacent to the southern border of the Crescent Junction Disposal Site, at which point they will be conveyed by truck to the disposal cell. Material that is too large for transport by container on rail cars will be transported to the disposal site by covered truck on US-191.

The disposal cell footprint will be excavated to a depth of approximately 20 feet. The final footprint configuration has not yet been determined. Contaminated materials will be placed and compacted in layers. Dust will be controlled through use of construction water. After all materials are transported, the pile will be covered with rock/soil materials. Surrounding areas will be reclaimed with native seed mixes approved by BLM, and all areas not necessary for future access or study will be released back to the BLM.

Typical site activities will include a controlled access area with active tailings deposition, vehicle washing and decontamination stations, a pond for construction water, temporary field offices, vehicle maintenance and storage areas, a radiological control area to check worker radiation levels, worker parking, and soil stockpile areas.

## **1.4 Climatology**

The climate (based on Moab) of the Crescent Junction region is semiarid. Average annual temperature is approximately 57 °F. January is the coldest month, averaging 30 °F, and July is the warmest month, averaging 82 °F. Extreme temperatures have ranged from –18 °F in January 1963 to 111 °F, which has occurred more than once (in July 1953 and on earlier occasions). Temperatures of 90 °F or higher occur about 100 days per year, with about 80 percent of those occurring during June, July, and August. Temperatures below freezing (32 °F) occur on the average of 123 days of the year with about 80 percent of those occurring during November through February. The effects of high temperature on human comfort are moderated by the low relative humidity, which is often less than 50 percent during the daytime hours.

Average annual precipitation at Moab is 8 inches, distributed approximately equally among the seasons with slight peaks during the spring and fall. Potential evapotranspiration of 50 inches per year greatly exceeds annual precipitation. Mean pan evaporation (about 55 inches per year) and lake evaporation (about 38 inches per year) also greatly exceed the total annual precipitation. Thunderstorms occur about 40 days per year. Hail occurs approximately 3 days per year.

Prevailing winds in the region are southeasterly. Cold air drainage at the site can occur from the northwest under stable conditions. The probability of a tornado is minimal. One tornado with wind speeds of 100 miles per hour would be expected only once in approximately 100,000 years (NRC 1999).

## **1.5 Regulatory Requirements**

This Plan is prepared in response to State of Utah Division of Air Quality regulations for the control of fugitive dust, as found in Section R307-205 (U.A.C., September 2001). Dust control plans are required to minimize on-site fugitive dust from storage and handling of aggregate materials, construction/demolition activities, mining activities, and tailings piles and ponds. The portion of the regulations that specifically applies to the Crescent Junction Site (R307-205), requires that "... any person owning or operating an existing tailings operation where fugitive dust results from grading, excavating, depositing, or natural erosion or other causes in association with such operation shall take steps to minimize fugitive dust from such activities." This site-specific Plan will be submitted to the Executive Secretary for the Utah Division of Air Quality in Salt Lake City, Utah, for approval and will be updated and revised as necessary to reflect dust controls that correspond to current and on-going site activities and operations.

## **1.6 Environmental Monitoring**

In addition to the implementation of physical dust controls, DOE has developed and implemented an environmental air-monitoring program for the Crescent Junction Site. This environmental air monitoring program consists of sampling airborne particulates, radon, and direct gamma radiation at various locations along the site perimeter and at various off-site locations. Background monitoring locations have been established to provide ambient air quality data. The background or ambient air quality data will be compared to air quality data collected from the on-site monitoring locations for the purposes of determining compliance with various DOE orders and federal and state air quality regulations.

As part of DOE's environmental air monitoring and fugitive dust control strategy, a meteorological monitoring station has been established at the Crescent Junction Site. Wind speed and wind direction data collected from this monitoring station will be used to determine when site-specific action levels have been exceeded and specific dust controls (e.g., the application of dust suppression techniques) must be initiated. In addition, personnel certified in reading opacity measurements in the State of Utah will determine when active dust control measures should be initiated and when specific dust generating activities (i.e., excavating, hauling, grading, etc.) should be discontinued.

In addition to complying with the State of Utah Fugitive Dust Rule, this Plan is consistent with the intent of complying with various DOE orders. DOE Order 5400.1, *General Environmental Protection Program*, specifies that effluent monitoring and environmental surveillance be conducted to determine the effect of DOE activities upon "...on-site and offsite environmental and natural resources," and to "...verify compliance with applicable Federal, State, and local effluent regulations and DOE Orders." Similarly, DOE Order 5400.5, *Radiation Protection of the Public and the Environment*, requires that DOE control and monitor radiological exposures from its facilities and activities.

The physical form of the radioactive contaminants (i.e., uranium mill tailings) to be transferred from the Moab Site is primarily best described as a fine-grained, sand-like material that is susceptible to wind erosion. Consequently, one of DOE's major objectives at the Crescent Junction Site is to control and contain the off-site transport of radiological contaminants resulting from the erosive forces of wind and storm water. This Plan outlines DOE's strategy for controlling airborne dust emissions and minimizing/controlling the off-site transport of mill tailings resulting from wind erosion.

A summary of air monitoring program at Crescent Junction consists of

- Five air monitoring stations to measure radon and gamma.
- One residential monitoring location approximately 1.5 miles south of the disposal cell for radon, direct gamma, and radioparticulates (thorium-230, polonium-210, radium-226, and total uranium in microcuries per milliliter).

Off-site air monitoring stations for radon, direct gamma, and radioparticulates consists of

- A meteorological monitoring station near Crescent Junction.
- Residential and exterior air monitoring stations for radon, gamma, radioparticulates, and indoor direct gamma monitoring at one location in Thompson Springs.

Data collection instruments that will be used for the air-monitoring program are

- Thermoluminescent dosimeter (TLD) badges
- Radon TrackEtch cups
- Particulate sampler

Figure 1–3 presents the locations of air monitoring instruments.

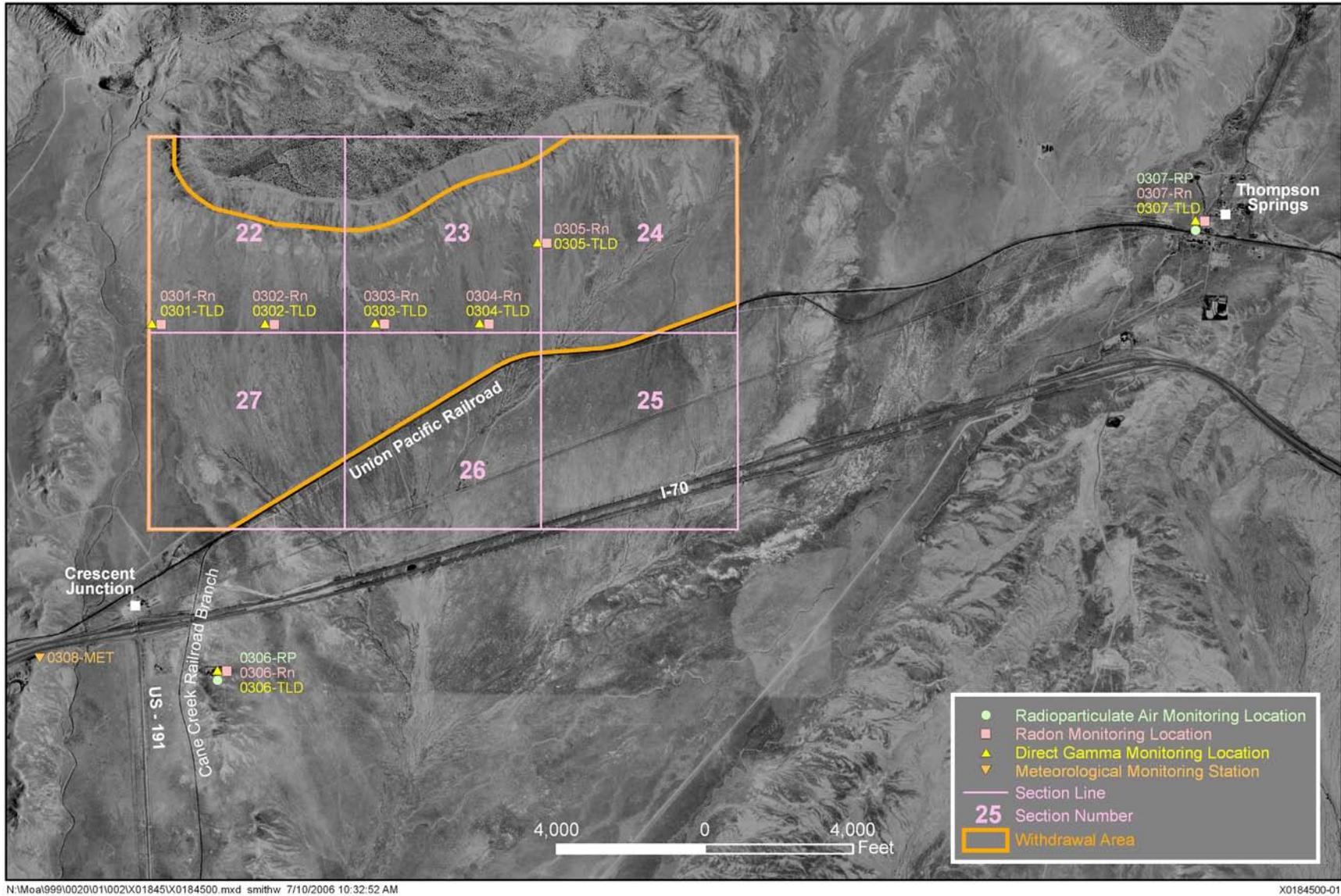


Figure 1-3. Monitoring Locations at and Adjacent to Crescent Junction, Utah

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## 2.0 Site Source Information

### 2.1 Site Ownership and Physical Location

As required by the Utah Division of Air Quality, the following site-specific source information is provided:

- 1) **Name of Operation**— Crescent Junction Site of Moab UMTRA Project
- 2) **Owner/Operator Information**—U.S. Department of Energy Grand Junction office. 2597 B3/4 Road, Grand Junction, Colorado 81503. DOE Contact: Donald R. Metzler, Federal Project Director (970) 248-7612. Plan Contact: Ed Baker (970) 248-6566.
- 3) **Physical Address of Operations**—1.5 miles northeast, Crescent Junction, Utah.
- 4) **UTM Coordinates or Longitude/Latitude of Operations:**
  - Latitude:** 38 degrees, 57 minutes, 79 seconds - North
  - Longitude:** 109 degrees, 48 minutes, 0.1 seconds - West
  - Elevation:** 5,130 U.S. feet above MSL

### 2.2 Source Information

**Type of Material Processed or Disturbed**—The materials of concern with respect to fugitive dust emissions at the Crescent Junction Site will be residual uranium mill tailings and contaminated native soils/sand. Approximately 16 million tons of uranium mill tailings and contaminated soils will be removed from the Moab site and transported to the Crescent Junction repository site. The majority of materials will be poorly consolidated soils that are considered to be a "high-potential" source of fugitive dust emissions.

The points of potential emissions are the transfer point for transported material to site haul trucks, the dumping of material into the disposal cell, and the active disposal material surface in the cell. Another major point of potential emissions is the stockpiled soil removed from the disposal cell. Combined, the disposal cell and stockpiled native material will constitute approximately 80 percent of the total land surface of the Crescent Junction Disposal Site. The remainder of the site is not considered to be a significant source of fugitive dust emissions because of (1) The low level of past disturbances in these areas, (2) the low level of anticipated activity occurring in these areas, and (3) The percentage of vegetative cover present within these areas.

Source areas identified as a "moderate-potential" consist of areas that will be moderately disturbed and temporarily stabilized, such as the office trailer staging area, access road, rail spur, and construction water pond areas (approximately 10 percent of the total site area). Soils and graveled surface in these areas are typically better consolidated and more stable because of varying degrees of vegetation or rock cover. If these areas prove to be a source for fugitive dust emissions in the future, appropriate control measures will be implemented.

Most of the "low-potential" areas are located along the site perimeter and consist of vegetated rangeland on the margins of the site boundary. Typically, little to no activity is occurring or is planned in these areas. The "low-potential" areas constitute approximately 10 percent of the total site area. Consequently, DOE does not anticipate that these areas will be a significant source of dust emissions from the facility, and no controls are planned for these areas.

**Length/Duration of Construction Project**—DOE is in the process of evaluating disposal action alternatives. Depending upon which disposal alternative is ultimately selected, DOE's responsibility for monitoring and controlling fugitive dust emissions from this site will range in duration from approximately 10 to 20 years.

**Description of Planned Activities**—Contaminated materials associated with the former Atlas Minerals Mill at the Moab UMTRA Project Site will be transported to the Crescent Junction Disposal Site and placed in a repository of approximately 420 acres, which will be secure from human intrusion. The repository consists of the disposal cell (approximately 200 acres), soil stockpile areas, and support facilities for offices, rail road spur, roads, and construction water pond.

The planned action will result in the removal of tailings materials from the Moab tailings pile, associated surface contamination, and contaminated material from vicinity properties, for a total volume of approximately 12 million cubic yards of contaminated materials.

The majority of contaminated materials will be transported from the Moab UMTRA Project Site in sealed containers by rail over the existing Cane Creek Branch of the Union Pacific Railroad. They will be offloaded adjacent to the southern border of the Crescent Junction Disposal Site, at which point they will be conveyed in sealed containers by truck to the disposal cell. Material that is too large for transport by container on rail cars will be transported to the disposal site by covered truck along US-191.

The disposal cell footprint will be excavated to a depth of approximately 18 to 25 feet. The final footprint configuration has not been determined. Contaminated materials will be placed and compacted in layers. Dust will be controlled through use of construction water and/or dust palliatives. After all materials are transported, the pile will be covered with rock materials. Surrounding areas will be reclaimed with native seed mixes approved by BLM, and all areas not necessary for future access or study will be released back to BLM.

### **Responsible Individuals**

Donald R. Metzler, DOE Federal Project Director	(970) 248-7612
Ken Karp, Contractor Project Manager	(970) 248-6464
Jim Erickson, Contractor Site Manager	(970) 248-6395
Ed Baker, Environmental Compliance Lead	(970) 248-6566

If a subcontractor is selected and assumes dust control responsibilities, the State of Utah will be notified.

### 3.0 Description of Fugitive Dust Emission Activities

Descriptions of the on-site activities that may contribute to or generate fugitive dust emissions at the Crescent Junction Site are presented in the following text.

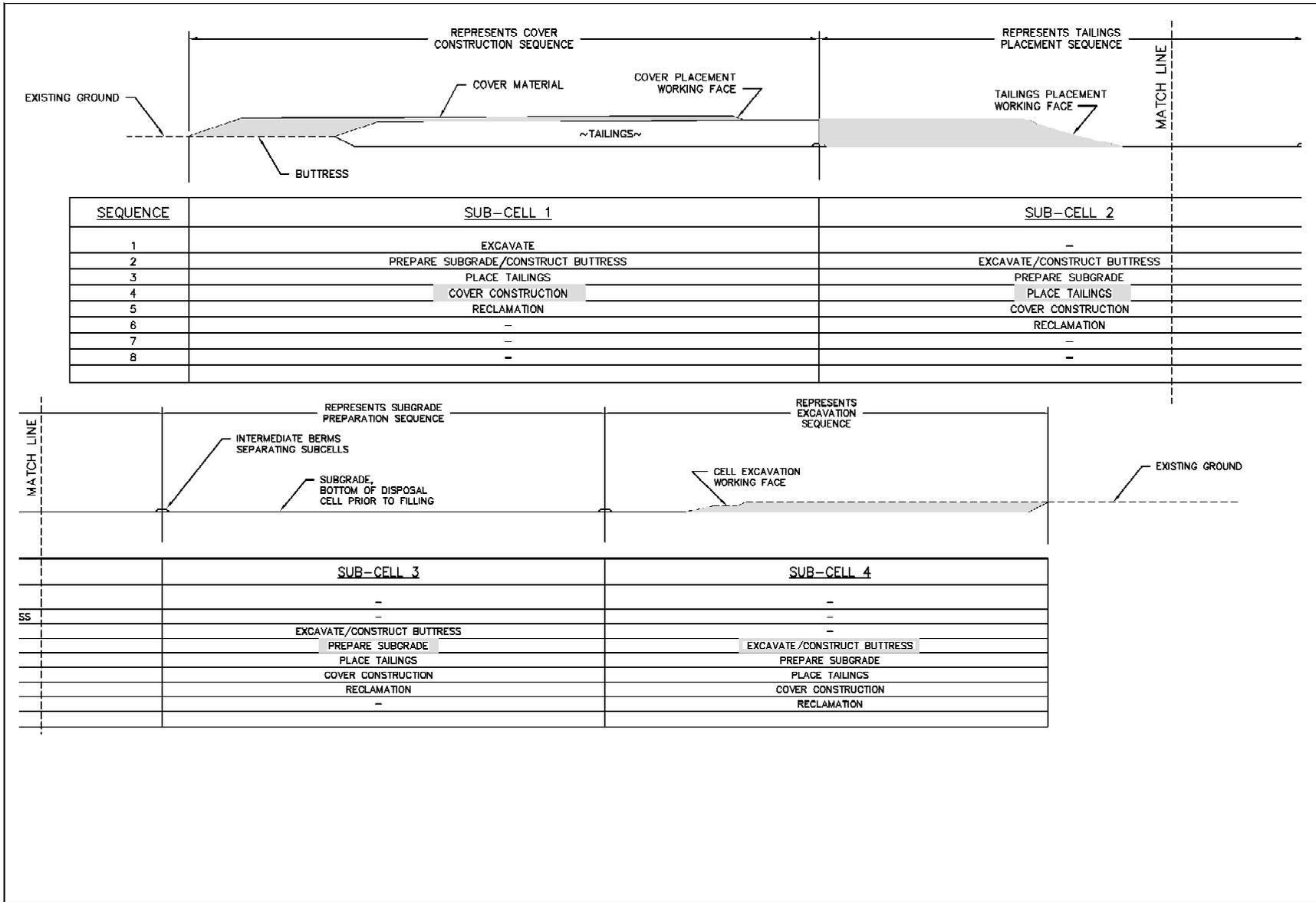
**Types of Activity**—DOE is currently in the process of performing various types of environmental characterization activities at the Crescent Junction Site. These activities which will provide a baseline of conditions prior to construction, include surface and ground water monitoring, radon and direct gamma radiation monitoring, environmental air/particulate monitoring, meteorological monitoring, and various engineering studies and surveys. Most of these activities are non-intrusive and result in little-to-no fugitive dust emissions. Vehicles, used to transport personnel and equipment from one location to another, may result in minimal generation of fugitive dust.

**Implementation of Fugitive Dust and Storm Water Runoff Controls During Construction**—DOE recognizes that disturbed soils, mill tailings, and residual contaminated soils are especially vulnerable to wind and storm runoff. In an effort to contain these contaminants and prevent their migration off the site, establishment of fugitive dust and storm water runoff controls is a priority for DOE. Implementation of these controls will necessitate the use of heavy equipment to construct support facilities, construct the disposal cell, construct sediment retention basins, excavate borrow ditches, install culverts, apply dust suppressant materials, etc. However, fugitive emissions anticipated as a result of these activities are expected to be minimal in conjunction with extensive dust suppression activities. Whenever possible, construction will be phased, and each phase will include reclamation and/or permanent stabilization. Soils will be excavated and stockpiled.

**Establishing Support Offices, Access Road, and Railroad Staging Areas**—DOE plans to construct a potable water line, construction office and support trailers, and an access road in 2006. In the next 2 years power and construction water utilities will also be installed, and a railroad staging area will be constructed. To complete these tasks, mobile office buildings will be set up on the site, security fencing and gates will be installed, and utilities will be extended to the new facilities. This effort will require the use of heavy equipment for a relatively short-term duration and is not expected to result in significant fugitive dust emissions.

**Preliminary Plans for Construction of Disposal Cell**—The disposal cell footprint will be less than 150 acres in size. Approximately 12 inches of topsoil-like material will be stripped and stockpiled from the cell and support facilities. The cell will be excavated to a depth of 18 to 25 feet, and excavated material will be placed around the perimeter to construct the buttress area. Excavation and deposition of tailings material will proceed sequentially to minimize the size of the working area that will be exposed to wind and water erosion.

**Disposal Cell Activities**— Cell construction will be phased in subsections to minimize disturbed areas and the size of soil stockpiles at any given time. [Figure 3-1](#) presents the disposal cell sequence profile. The cell cover will be an engineered mixture of various materials. Although more detailed information is available in the Final Environmental Impact Statement, and specifics may change as the design progresses, the following information is a general description of the planned cover structure. After the tailings are placed, a compacted heavy clay borrow



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Figure 3-1. Disposal Cell Sequence Profile

layer (1.5 feet thick) will be placed over the tailings as a radon barrier. A capillary break, consisting of sand and gravel (0.5 feet thick) will be placed over the radon barrier. This would be topped with a soil water storage layer (3 feet thick on the sides; 3.5 feet thick on the top), then a vegetated layer. The vegetated layer on the top of the cell would be seeded in a 0.5-foot-thick soil/rock admixture; on the side slopes, it would consist of a 1-foot-thick rock layer with soil fill. Support structures, trailer staging areas, loadout areas, and most of the access roads will be removed and reclaimed following installation of the final section of the cover,.

**Waste Management Activities**—For safe storage and to prevent the spread of contaminants into the environment, petroleum-contaminated soils will be excavated and placed into a Best Management Practice Area (BMPA) along with other consolidated waste materials. Any on-site wastes requiring special handling or management will be identified and addressed by DOE's waste management policy and procedures. The BMPA will be a bermed temporary storage area that will be constructed with a polyethylene liner. Materials will be temporarily stored at this location until a permanent disposal option is defined. The construction of this area and the removal and excavation of various petroleum-contaminated soils will involve the use of heavy equipment. Moderate fugitive dust emissions can be expected from these activities.

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## **4.0 Description of Fugitive Dust Emission Controls On-Site**

Fugitive dust emission controls to be used at the Crescent Junction Site are presented for each of the potential source areas. All sources of fugitive dust emissions at the Crescent Junction Site are related to site activities and site conditions. The routine operation of heavy equipment is not considered to be a significant source of emissions at this site because of planned mitigation measures.

### **4.1 High-Potential Source Areas**

Certain portions of the Crescent Junction Site are considered to be potentially significant sources of fugitive dust emissions and will require more active controls than other areas. These areas are characterized by loose, poorly consolidated sediments; poor vegetative cover, and high levels of future/anticipated activity or disturbance. Because both the native soils and uranium mill tailings possess a silt/sand-like texture, these materials can easily become airborne given sufficient climatic conditions (i.e., low soil moisture content, sufficient wind speeds). Consequently, DOE has designated these areas as the highest priority in its dust control strategy. Cumulatively, these high-potential areas consist of approximately 40 percent of the total site surface area. [Table 4-1](#) presents the specific high-potential source areas, generally associated with the disposal cell, rail/truck transfer station, and site work roads, and the planned dust controls to be implemented for each of these areas.

### **4.2 Moderate-Potential Source Areas**

Other portions of the Crescent Junction Site are considered to be moderate sources of fugitive dust emissions and will require a less aggressive approach to dust control. These areas are characterized by more stable soil conditions, a greater percentage of vegetative cover, lesser quantities of radiologically contaminated materials, and moderate levels of activity. These areas are located mostly around the disposal cell in areas used for short-term stockpiling of excavated native material. Cumulatively, these moderate-potential areas constitute approximately 20 percent of the total site surface area. [Table 4-1](#) presents a summary of the anticipated dust control measures to be used in these areas.

### **4.3 Low-Potential Source Areas**

Approximately 40 percent of the site is considered to be a low-potential source for fugitive dust emissions. These areas include the trailer support area, railroad support area, main access road, construction water pond, and relatively undisturbed areas. These areas are designated as having a low potential for fugitive dust emissions because there is little continuing surface disturbances in these areas and some areas contain vegetative cover. After the initial construction and stabilization with dust palliative, gravel, or vegetation, the potential for fugitive dust is low. Minimal or no dust controls are planned for these areas (see [Table 4-1](#)).

Table 4–1. Summary of Fugitive Dust Controls for the Crescent Junction Site

Fugitive Dust Source		Dust Controls								
		Water Truck	Sprinkler Irrigation	Vegetative Cover	Soil Conditioner (e.g., lignum sulfate)	Surfactant	Dust Palliative (i.e., magnesium/calcium chloride)	Gravel/Rock	Other (polymer, fiber mat, tackifier)	No Controls
High Potential Areas	Active Disposal Cell	X	X				X		X	
	Rail/Truck Transfer Area	X	X				X		X	
	Tailings Pile (Inactive sites)	X	X				X		X	
	Buttress Material Area	X		X	X	X			X	
	Capped/Final Surface Area		X	X	X	X		X	X	
	Site Work Roads	X					X	X		
Moderate Potential Areas	Excavated Material Stockpile Areas	X		X	X				X	
	Utility Corridors	X		X	X				X	
Low Potential Areas	Trailer Support Area							X		
	Railroad Support Area							X		
	Main Access Road						X	X		
	Construction Water Pond and Vegetated Areas									X

#### 4.4 Standards, Action Levels, and Response Actions

Table 4–2 presents the applicable regulatory standards and action levels relative to controlling fugitive dust emissions at the Crescent Junction Site, and the appropriate response actions to be implemented once it is determined that standards or actions levels have been exceeded.

An air particulate monitoring network has been implemented at the Crescent Junction Site in accordance with DOE Order 5400.5, *Radiation Protection of the Public and the Environment* and DOE's *Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance* (DOE 1991). Air-quality monitoring data are routinely collected and reviewed to ensure compliance with DOE orders and applicable federal and state air quality regulations. Air particulate sample locations are shown in Figure 1–3.

Table 4–2. Fugitive Dust Standards, Action Levels, and Response Actions

Standard/ Site-Specific Action Level	Method of Determination	Response Action
Opacity cannot exceed 20 percent at any on-site location or source (U.A.C. R307–309). DOE's goal at the site boundary is 0-percent opacity.	Visual observation by a Certified Opacity Reader (EPA Method 9, "Visual Determination of Opacity Emissions from Stationary Sources")	Initiate immediate dust control measures as outlined in Table 4–1. Cease all dust-generating activities.
Sustained wind speeds exceeding 20 miles per hour. (EPA Method 9, "Visual Determination of Opacity Emissions from Stationary Sources")	Real time meteorological monitoring.	Monitor visible emissions; cease all dust-generating activities if necessary to maintain 20-percent opacity or less. If needed, initiate immediate dust control measures as outlined in Table 4–1.
Cannot exceed public exposure standards (DOE Order 5400.5)	Analysis of filters collected by continuous air samplers.	Reassess Fugitive Dust Control Plan and controls.

## 4.5 Best Management Practices

The following best management practices will also be followed to help minimize and control dust emissions at the Crescent Junction Site to the greatest extent possible:

**Roads**—All on-site traffic will be restricted to specific-designated roads. Off-road travel will only be authorized on a case-by-case basis (e.g., access to a remote monitoring well). The main access road will be gravel, treated with dust palliative or paved. Traffic on the active tailings pile will be restricted to designated roads to minimize disturbance of previously treated/stabilized areas. Traffic speed will also be restricted to an appropriate level on all designated roads. All designated roads will be considered as high potential dust source areas and, as such, will be a priority for dust controls using magnesium/calcium chloride, watering, or gravel.

**Hours of Operation**—This Plan will be in effect during all hours of operation at the Crescent Junction Site. During non-business hours, there will be no activities generating dust; therefore, dust control actions will be restricted to hours of operation only. However, as a best management practice, if high winds are evident at the close of a business day (or immediately prior to a weekend, holiday, etc.), site personnel should evaluate vulnerable areas and implement controls as appropriate to minimize off-hours emissions.

**Use of Dust Palliatives or Chemical Suppressants**—Various chemical dust suppressants (e.g., surfactants, salt-based soil conditioners, polymers) shall be used in accordance with the recommended end uses for those products. For temporary dust control, a polymer may be used

for stabilization prior to revegetation. Site personnel shall not exceed the manufacturer recommended application rates. Material safety data sheets (MSDSs) for all dust suppressant materials used at the Crescent Junction Site shall be reviewed and approved by the Compliance and Health and Safety organizations. Prior to application, site personnel shall determine and evaluate if the use of the dust suppressant could interfere with other site monitoring activities.

## 5.0 Off-Site Fugitive Dust Emission Controls

To minimize the potential for off-site releases or emissions, the following controls will also be implemented:

**Decontamination and Tracking Pad**—Prior to leaving designated contamination areas at the Crescent Junction Site, all vehicles and equipment will be thoroughly washed and decontaminated at a decontamination pad using a high-pressure water wash. This practice should minimize the potential for any tracking of sediment or contaminants off the site.

**Covered Loads**—Tailings material will be transported primarily to the disposal site in sealed containers on flatbed rail cars. At the rail staging area, the containers will be transferred to haul trucks for final transport to the disposal cell. A minor portion of oversized contaminated material will be transported entirely by truck. All trucks hauling materials shall be covered with tarps to minimize the loss of materials in transit and on the site. All loads shall be inspected to ensure that they are properly covered prior to departure from both the Moab project Site and the rail staging area.

**Spill Response**—In the event of a spill or release of contaminated materials off site, the spilled materials will be immediately contained and cleaned up. Emergency spill response actions are outlined in Section 6.0 of the *Moab UMTRA Project Health and Safety Plan* (DOE 2006).

End of current text

## 6.0 References

DOE (U.S. Department of Energy), 1991. *Environmental Regulatory Guide for Radiological Effluent Monitoring and Environmental Surveillance*, DOE/EH-0173T, January.

———, 2006 (continuously updated), *Moab UMTRA Project Health and Safety Plan*, DOE-EM/GJ1085-2006, Grand Junction, Colorado.

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———, DOE Order 5400.5, *Radiation Protection of the Public and the Environment*.

NRC (U.S. Nuclear Regulatory Commission) 1999. *Final Environmental Impact Statement Related to Reclamation of the Uranium Mill Tailings at the Atlas Site, Moab, Utah*, NUREG-1531, Vol. 1, Washington, DC

Public Law 106-398, 2001. Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001.

U.A.C. (Utah Administrative Code), 2001. R307-205,: Emission Standards: Fugitive Emissions and Fugitive Dust, September, Salt Lake City, Utah.

———, R313-15-301, Standards for Protection Against Radiation, Dose Limits for Individual members of the Public, September 2001, Salt Lake City, Utah.

UMTRCA 42 *United States Code* 7912.

End of current text

**Appendix A**

**Material Safety Data Sheets for**

**Dust Suppressants Used at the Crescent Junction Site**

1. Calcium Chloride
2. Dust Bond
3. Envirotac II
4. Magnesium Chloride
5. Soil Seal
6. SoilTac

## Material Safety Data Sheet

Revision Issued: 8/19/2003

Supersedes: 8/25/2000

First Issued: 12/01/85

### Section I - Chemical Product And Company Identification

**Product Name: Calcium Chloride, Liquid**

CAS Number: 10043-52-4

HBCC MSDS No. CC06000



**HILL BROTHERS** *Chemical Co.*

1675 NORTH MAIN STREET • ORANGE, CALIFORNIA 92867-3499  
(714) 998-8800 • FAX: (714) 998-8310  
<http://hillbrothers.com>

1675 No. Main Street, Orange, California 92867  
Telephone No: 714-998-8800 | Chemtrec: 800-424-9300

### Section II - Composition/Information On Ingredients

Chemical Name	CAS Number	%	Exposure Limits (TWAs) in Air		
			ACGIH TLV	OSHA PEL	STEL
Calcium Chloride	10043-52-4	24-40	N/A	N/A	N/A

### Section III - Hazard Identification

**Routes of Exposure:** Calcium chloride can affect the body if it is ingested or if it comes in contact with the eyes or skin.

**Summary of Acute Health Hazards**

**Ingestion:** Causes irritation of mouth and stomach.

**Inhalation:** Causes irritation of nose and throat. Additional effects may include shortness of breath.

**Skin:** Causes mild irritation. Additional effects may include blisters or sores.

**Eyes:** Causes irritation and possible transient corneal injury. Tearing may occur.

**Summary of Chronic Health Hazards:** May cause perforation of the nasal septum and nosebleeds. Contact with heated product can cause thermal burns with resultant corneal injury.

**Effects of Overexposure:** Possible superficial burns and transient corneal injury.

**Medical Conditions Generally Aggravated by Exposure:** N/A

### Section IV - First Aid Measures

**Ingestion:** If swallowed will cause nausea and vomiting. If victim is conscious, have victim drink water or milk. If victim is unconscious or having convulsions, do nothing except keep victim warm GET MEDICAL ATTENTION.

**Inhalation:** Move to fresh air; if discomfort persists, GET MEDICAL ATTENTION.

**Skin:** If necessary, remove contaminated clothing and shoes. Flush affected areas with plenty of water for at least 15 minutes.

**Eyes:** Promptly flood with water and continue washing for at least 15 minutes. Consult an ophthalmologist.

### Section V - Fire Fighting Measures

**Flash Point:** Not flammable      **Autoignition Temperature:** Not flammable

**Lower Explosive Limit:** N/A      **Upper Explosive Limit:** N/A

**Unusual Fire and Explosion Hazards:** N/A

**Extinguishing Media:** This product is non-flammable.

**Special Firefighting Procedures:** Avoid breathing corrosive vapors; keep upwind. Dike area to prevent runoff and contamination of water sources.

### Section VI - Accidental Release Measures

Dike the spilled liquid, and either pump back into original container or cover with clay-type substance for absorption.

### Section VII - Handling and Storage

Store at ambient temperature. Prevent possible eye and skin contact by wearing protective clothing and equipment.

### Section VIII - Exposure Controls/Personal Protection

**Respiratory Protection:** N/A

**Ventilation:** Use local exhaust in enclosed areas. Natural ventilation for outdoor areas.

**Protective Clothing:** Employees should be provided with and use impervious clothing, rubber gloves, and rubber boots.

**Eye Protection:** Employees should be provided with and required to use splash-proof safety goggles where there is any possibility of calcium chloride contacting the eyes.

**Other Protective Clothing or Equipment:** N/A

**Work/Hygienic Practices:** Avoid contact with the eyes, skin, and mucous membranes. Wash hands thoroughly with soap and water before eating, drinking, smoking or using toilet facilities. Do NOT place food, coffee or other drinks in the area where dusting or splashing of solutions is possible.

### Section IX - Physical and Chemical Properties

**Physical State:** Liquid

**pH:** 5-9

**Melting Point/Range:** N/A

**Boiling Point/Range:** 113°C for 30% Solution; 115°C for 34.7% Solution; 118°C for 37.5% Solution

**Appearance/Color/Odor:** Clear to straw colored liquid, odorless

**Solubility in Water:** 100%

**Vapor Pressure(mmHg):** N/A

**Specific Gravity(Water=1):** 1.3 @ 60°F (for 30% Solution); 1.35 @ 60°F (for 34.7% Solution); 1.39 @ 60°F (for 37.5% Solution)

**Molecular Weight:** 110.99

**Vapor Density(Air=1):** N/A

**% Volatiles:** 70% for 33 Be; 65.3% for

37.4 Be; 62.5% for 40 Be

**How to detect this compound :** N/A

### Section X - Stability and Reactivity

**Stability:** Stable

**Hazardous Polymerization:** Will not occur

**Conditions to Avoid:** N/A

**Materials to Avoid:** Metals will slowly corrode in aqueous solutions. Keep away from galvanized iron, aluminum, and tin. Boric acid and calcium oxide are incompatible.

**Hazardous Decomposition Products:** If liquid completely dries from fire, thermal decomposition products may include toxic and corrosive fumes of chlorine and hydrogen chloride. Product may react with some metals (aluminum, zinc, tin, etc.) to release flammable hydrogen gas.

### Section XI - Toxicological Information

N/A

### Section XII - Ecological Information

N/A

### Section XIII - Disposal Considerations

Add to large volume of water. Dispose of in accordance with local, state and federal regulations.

### Section XIV - Transport Information

**DOT Proper Shipping Name:** N/A

**DOT Hazard Class/ I.D. No.:** N/A

### Section XV - Regulatory Information

**Reportable Quantity:** N/A

**NFPA Rating:** Health - 1; Fire - 0; Reactivity - 0

0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

**Carcinogenicity Lists:** No **NTP:** No **IARC Monograph:** No **OSHA Regulated:** No

### Section XVI - Other Information

**Synonyms/Common Names:** Calcium Chloride-Liquid

**Chemical Family/Type:** Inorganic Salt

**Sections changed since last revision:** V, VIII, IX, X, XIII

**IMPORTANT!** Read this MSDS before use or disposal of this product. Pass along the information to employees and any other persons who could be exposed to the product to be sure that they are aware of the information before use or other exposure. This MSDS has been prepared according to the OSHA Hazard Communication Standard [29 CFR 1910.1200]. The MSDS information is based on sources believed to be reliable.

However, since data, safety standards, and government regulations are subject to change and the conditions of handling and use, or misuse are beyond our control, **Hill Brothers Chemical Company** makes no warranty, either expressed or implied, with respect to the

completeness or continuing accuracy of the information contained herein and disclaims all liability for reliance thereon. Also, additional information may be necessary or helpful for specific conditions and circumstances of use. It is the user's responsibility to determine the suitability of this product and to evaluate risks prior to use, and then to exercise appropriate precautions for protection of employees and others.

# MATERIAL SAFETY DATA SHEET

**PRODUCT NAME:****DUST BOND®****MANUFACTURER:****D & D EMULSIONS, INC.  
270 PARK AVENUE EAST  
P. O. BOX 1706  
MANSFIELD, OH 44901****PHONE: (419) 525-4988****(419) 522-8440****FAX: (419) 522-8606****NFPA CLASSIFICATION**

0 = LEAST	HEALTH	= 1
1 = SLIGHT	FIRE	= 0
2 = MODERATE	REACTIVITY	= 0
3 = HIGH		
4 = EXTREME		

**SECTION I - COMPONENT DATA**

CHEMICAL COMPONENTS	%WT
Petroleum Resin C.A.S.#64742-04-7 and/or 64742-11-6 and/or 64742-34-3 Emulsifiers and Water	60+ 40

**SECTION II - PHYSICAL DATA**

**CHEMICAL NAME:** Petroleum hydrocarbon in water emulsion.  
**BOILING POINT (°F):** 212°  
**VAPOR PRESSURE (mmHg @ 20°C):** Same as Water.  
**VAPOR DENSITY (AIR = 1):** Same as Water.  
**SOLUBILITY IN WATER:** Readily dispersible.  
**SPECIFIC GRAVITY (H<sub>2</sub>O = 1):** Approx. 1.  
**VOLATILE (BY WT.):** nil.  
**EVAPORATIVE RATE (WATER = 1):** Same as Water.  
**pH INFORMATION:** 4.5 - 6.5.  
**APPEARANCE AND ODOR:** Yellow-brown color, no objectionable odor.

**SECTION III - FIRE & EXPLOSION HAZARD DATA**

**FLASH POINT (°F):** N/A  
**METHOD USED:** C.O.C.  
**FLAMMABILITY LIMITS (% VOL):** N/A  
**AUTO-IGNITION TEMPERATURE (°F):** N/A  
**LEL:** N/A **UEL:** N/A  
**EXTINGUISHING MEDIA:** CO<sub>2</sub>, Foam, Dry Chemical, Waterfog.

**SPECIAL FIRE FIGHTING PROCEDURES:**

Dense smoke may result. Proper protective equipment including self-contained breathing apparatus should be worn.

**SECTION IV - REACTIVITY DATA**

**STABILITY (CONDITIONS TO AVOID):** Material is stable. Avoid temperature above 180°F and freezing.

**INCOMPATIBILITY (MATERIALS TO AVOID):** Strong oxidizers such as hydrogen peroxide, bromine and chromic acid.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Carbon monoxide and carbon dioxide from burning. Oxides of nitrogen and sulfur may also be produced.

**HAZARDOUS POLYMERIZATION:** N/A

**SECTION V - HEALTH HAZARD DATA**

**PRIMARY ROUTE(S) OF ENTRY:** Skin contact, eyes, inhalation, ingestion.

**EFFECTS OF EXPOSURE:**

**INHALATION:** Prolonged extreme exposure to high concentrations of mist may cause bronchial or lung irritation.

**SKIN CONTACT:** IARC has determined that base oils similar to those under the classification CAS number 64742-04-7 or 64742-11-6 or 64742-34-3 may cause carcinogenic effects in laboratory animals through direct contact with their skin for long periods of time. Our emulsified base oils, properly handled as outlined in this MSDS, are not expected to have any harmful effects to humans.

**EYE CONTACT:** May cause mild irritation.

**INGESTION:** May cause irritation of the digestive tract.

**EXPOSURE LIMITS:**

CHEMICAL COMPONENTS (mg/m <sup>3</sup> )	OSHA PEL (mg/m <sup>3</sup> )	8 HOUR/TWA NTP (mg/m <sup>3</sup> )	IARC LISTED	YES
Oil Mist	5	2	NO	YES

**SECTION VI - EMERGENCY & FIRST-AID PROCEDURES**

**INHALATION:** Remove exposed person to fresh air.

**SKIN:** Wash exposed area with soap and water.

**EYES:** Flush with water for 15 minutes. Call physician.

**INGESTION:** Call physician immediately.

**SECTION VII - SPECIAL HANDLING INFORMATION**

**VENTILATION TYPE REQUIRED:** Local if necessary to maintain allowable PEL (permissible exposure limit) or TLV (threshold limit value).

**RESPIRATORY PROTECTION (specify type):** Use NIOSH/MSHA certified respirator with organic vapor cartridge if vapor concentration exceeds permissible exposure limit.

**PROTECTIVE GLOVES:** Oil resistant.

**EYE PROTECTION:** Chemical safety goggles.

**OTHER PROTECTIVE EQUIPMENT:** None.

**SECTION VIII - SPILL, LEAK & DISPOSAL PROCEDURES**

**ACTION TO TAKE FOR SPILLS (USE APPROPRIATE SAFETY EQUIPMENT):** Absorb in vermiculite, dry sand, earth, or similar material and dispose of in accordance with Federal, State, and Local regulations.

**WASTE DISPOSAL METHOD:** Material is not classified as a hazardous waste.

**SECTION IX - SPECIAL PRECAUTIONS:****PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:**

Avoid prolonged or repeated contact with skin or breathing of vapors, mists, or fumes. Launder contaminated clothing before reuse. Keep containers tightly closed. Avoid strong oxidizers. Eliminate all sources of ignition such as flames or sparks.

**SECTION X - TRANSPORTATION DATA**

**D.O.T. INFORMATION:** Not regulated.  
**HAZARDOUS MATERIAL PROPER SHIPPING NAME:** N/A

**HAZARD CLASS:** N/A

**IDENTIFICATION NUMBER:** N/A

**EPA HAZARDOUS WASTE NUMBER:** N/A

**SECTION XI - ENVIRONMENTAL/SAFETY REGULATIONS**

**SECTION 313 (TITLE III SUPERFUND AMENDMENT AND REAUTHORIZATION ACT):** This product does not contain any chemical 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.

THE INFORMATION CONTAINED HEREIN WAS OBTAINED FROM SOURCES WE BELIEVE TO BE RELIABLE. HOWEVER, THE INFORMATION IS PROVIDED WITHOUT WARRANTY, EXPRESSED OR IMPLIED.

BECAUSE THE HANDLING, STORAGE, USE AND DISPOSAL OF THE PRODUCT ARE BEYOND OUR CONTROL, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, DAMAGE OR EXPENSE FROM THE HANDLING, STORAGE, USE OR DISPOSAL OF THE PRODUCT.

# Envirotac II®

## Material Safety Data Sheet (page 1/4)

Vinyl Acetate / Acrylic Copolymer

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Envirotac II® Soil Stabilizer / Dust Palliative**

MSDS Date: 3/22/00

COMPANY IDENTIFICATION

Vermillion's Environmental Products & Applications, Inc. (EP&A, Inc.)  
 PO Box 786, Gilbert, Arizona 85299-0786

Envirotac® is a registered trademark of Vermillion's Environmental Products and Applications, Inc.

EMERGENCY TELEPHONE NUMBERS

HEALTH EMERGENCY.....(760) 774-8375

SPILL EMERGENCY.....(760) 774-8375

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

No.		CAS REG NO	WEIGHT (%)
1	Acrylic copolymer	Not Hazardous	39-43
2	Individual residual monomers	Not Required	<0.1
3	Aqua ammonia	1336-21-6	<1.0
4	Water	7732-18-5	57-61

See SECTION 8, Exposure Controls / Personal Protection

### 3. HAZARDS IDENTIFICATION

Primary Routes of Exposure..... Inhalation, Eye Contact and Skin Contact

Inhalation..... Inhalation of vapor or mist can cause the following: -headache -nausea -irritation of nose, throat, and lungs

Eye Contact..... Direct contact with material can cause the following: -slight irritation

Skin Contact..... Prolonged or repeated skin contact can cause the following: -slight skin irritation

### 4. FIRST AID MEASURES

Inhalation..... Move subject to fresh air.

Eye Contact..... Flush eyes with water. Consult a physician if irritation persists.

Skin Contact..... Wash affected skin area thoroughly with soap and water. Consult a physician if irritation persists.

Ingestion..... If swallowed, give 2 glasses of water to drink. Consult a physician. Never give anything by mouth to an unconscious person.

### 5. FIRE FIGHTING MEASURES

Flash Point..... Noncombustible

Auto-ignition Temperature..... Not Applicable

Lower Explosive Limit..... Not Applicable

Upper Explosive Limit..... Not Applicable

Unusual Hazards..... Material can splatter above 100C/212F. Dried product can burn.

Extinguishing Agents..... Use extinguishing media appropriate for surrounding fire.

Personal Protective Equipment..... Wear self-contained breathing apparatus (pressure-demand NIOSH approved or equivalent) and full protective gear.

### 6. ACCIDENTAL RELEASE MEASURES

Personal Protection..... Appropriate protective equipment must be worn when handling a spill of this material. See SECTION 8, Exposure Controls/Personal Protection, for recommendations. If exposed to material during clean-up operations, see SECTION 4, First Aid Measures, for actions to follow.

Procedures..... Keep spectators away. Floor may be slippery; use care to avoid falling. Contain spills immediately with inert materials (e.g. sand, earth). Transfer liquids and solid diking material to separate suitable containers for recovery or disposal.

**CAUTION:** Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

# Envirotac II®

## Material Safety Data Sheet (page 2/4)

### 7. HANDLING AND STORAGE

Storage Conditions ..... Keep from freezing; material may coagulate. The minimum recommended storage temperature for this material is 1C/34F. The maximum recommended storage temperature for this material is 49C/120F.

Handling Procedures ..... Monomer vapors can be evolved when material is heated during processing operations. See SECTION 8, Exposure Controls/Personal Protection, for types of ventilation required.

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Exposure Limit Information

No.		CAS REG NO	WEIGHT (%)
1	Acrylic copolymer	Not Hazardous	39-43
2	Individual residual monomers	Not Required	<0.1
3	Aqua ammonia	1336-21-6	<1.0
4	Water	7732-18-5	57-61

Comp.	Units	EP&A, Inc.		OSHA		ACGIH	
		TWA	STEL	TWA	STEL	TWA	STEL
1		None	None	None	None	None	None
2		a	a	a	a	a	a
3	ppm	25 b	35 b	None	35 b	25 b	35 b
4		None	None	None	None	None	None

a Not Required  
 b As Ammonia

Respiratory Protection ..... A respiratory protection program meeting OSHA 1910.134 and ANSI Z88.2 requirements or equivalent must be followed whenever workplace conditions warrant a respirator's use. None required if airborne concentrations are maintained below the exposure limit listed in 'Exposure Limit Information'. For airborne concentrations up to 10 times the exposure limit, wear a properly fitted NIOSH approved (or equivalent) half-mask, air-purifying respirator. Air purifying respirators should be equipped with NIOSH approved (or equivalent) ammonia/methylamine cartridges and N95 filters. If oil mist is present, use R95 or P95 filters.

Eye Protection ..... Use safety glasses with side shields (ANSI Z87.1 or approved equivalent). Eye protection worn must be compatible with respiratory protection system employed.

Hand Protection ..... The glove(s) listed below may provide protection against permeation. Gloves of other chemically resistant materials may not provide adequate protection: - Neoprene

Engineering Controls (Ventilation) ..... Use Local exhaust ventilation with a minimum capture velocity of 100 ft/min. (0.5 m/sec.) at the point of vapor evolution. Refer to the current edition of Industrial Ventilation: A Manual of Recommended Practice published by the American Conference of Governmental Industrial Hygienists for information on the design, installation, use, and maintenance of exhaust systems.

Other Protective Equipment: ..... Facilities storing or utilizing this material should be equipped with an eyewash facility.

## Envirotac II®

### Material Safety Data Sheet (page 3/4)

#### 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance.....	Milky
Color.....	White
State.....	Liquid
Odor Characteristic.....	Ammonia odor
PH.....	5.0 to 9.5
Viscosity.....	1500 CPS Maximum
Specific Gravity (Water = 1).....	1.0 to 1.2
Vapor Density (Air = 1).....	<1 Water
Vapor Pressure.....	17 mm Hg @ 20°C/68°F Water
Melting Point.....	0°C/32°F Water
Boiling Point.....	100°C/212°F Water
Solubility in Water.....	Dilatable
Percent Volatility.....	57to 61% Water
Evaporation Rate (Bac = 1).....	<1 Water

The physical and chemical data given in Section 9 are typical values for this product and are not intended to be product specifications.

See Section 5, Fire Fighting Measures

#### 10. STABILITY AND REACTIVITY

Instability.....	This material is considered stable. However, avoid temperatures above 177C/350F, the onset of polymer decomposition. Thermal decomposition is dependent on time and temperature.
Hazardous Decomposition Products.....	Thermal decomposition may yield acrylic monomers.
Hazardous Polymerization.....	Product will not undergo polymerization.
Incompatibility.....	There are no known materials which are incompatible with this product.

#### 11. TOXICOLOGICAL INFORMATION

Acute Data	No Toxicity data are available for this material. The information shown in SECTION 3, Hazards Identification, is based on the toxicity profiles for a number of acrylic emulsions that are compositionally similar to this product. Typical data are: Oral LD50..... rat..... >5000 mg/kg Dermal LD..... rabbit..... >5000 mg/kg Skin irritation..... rabbit..... practically non-irrupting Eye irritation..... rabbit..... inconsequential irrational
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#### 12. ECOLOGICAL INFORMATION

No Applicable Data

#### 13. DISPOSAL CONSIDERATIONS

Procedure Coagulate the emulsion by the stepwise addition of ferric chloride and lime. Remove the clear supernatant and flush to a chemical sewer.

Landfill or incinerate remaining solids in accordance with local, state and federal regulations.

#### 14. TRANSPORT INFORMATION

US DOT Hazard Class.....NONREGULATED

## Envirotac II®

### Material Safety Data Sheet (page 4/4)

#### 15. REGULATORY INFORMATION

Workplace Classification... This product is considered non-hazardous under the OSHA Hazard Communication Standard (29CFR 1910.1200).

This product is not a 'controlled product' under the Canadian Workplace Hazardous Materials Information System (WHMIS).

SARA TITLE 3: Section 311/312 Categorizations (40CFR 370)..... This product is not a hazardous chemical under 29CFR 1910.1200, and therefore is not covered by Title III of SARA

SARA TITLE 3: Section 313 Information (40CFR 372)..... This product does not contain a chemical which is listed in Section 313 at or above de minimis concentrations.

CERCLA Information (40CFR 302.4)..... Releases of this material to air, land, or water are not reportable to the National Response Center under the Comprehensive Environmental Response, Compensation, Liability Act (CERCLA) or to state and local emergency planning committees under the Superfund Amendments and Reauthorization Act (SARA) Title III Section 304.

Waste Classification..... When a decision is made to discard this material as supplied, it does not meet RCRA's characteristic definition of ignitability, corrosively, or reactivity, and is not listed in 40 CFR 261.33. The toxicity characteristic (TC), however, has not been evaluated by the Toxicity Characteristic Leaching Procedure (TCLP).

United States..... All components of this product are in compliance with the inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

Pennsylvania..... Any material listed as "Not Hazardous" in the CAS REG NO. column of SECTION 2, Composition/Information On Ingredients, of this MSDS is a trade secret under the provisions of the Pennsylvania Worker and Community Right-to-Know Act.

#### 16. OTHER INFORMATION

HMIS Hazard Ratings..... HEALTH = 1, FLAMMABILITY = 0, REACTIVITY = 0.  
 PERSONAL PROTECTION: See Section 8, Exposure Controls/Personal Protection for recommended handling of material as supplied; check with supervisor for your actual use condition.  
 Scale: 0 = Minimal, 1 = Slight, 2 = Moderate, 3 = Serious, 4 = Severe  
 \* = Chronic Effects (See Section 3, Hazards Identification)  
 HMIS is a registered trademark of the National Paint and Coatings Association.

ABBREVIATIONS	
ACGIH.....	American Conference of Governmental Industrial Hygienists
OSHA.....	Occupational Safety and Health Administration
TLV.....	Threshold Limit Value
PEL.....	Permissible Exposure Limit
TWA.....	Time Weighted Average
STEL.....	Short-Term Exposure Limit
BAC.....	Butyl acetate
.....	Bar denotes a revision from previous MSDS in this area

The information contained herein relates only to the specific material identified. Vermillion's Environmental Products and Applications, Inc. believes that such information is accurate and reliable as of the date of this material safety data sheet, but no representation, guarantee or warranty, expressed or implied, is made as to the accuracy, reliability, or completeness of the information. Vermillion's Environmental Products and Applications, Inc. urges persons receiving this information to make their own determination as to the information's suitability and completeness for their particular application.

MSDS Number: **M0156** \* \* \* \* \* *Effective Date: 11/04/04* \* \* \* \* \* *Supersedes: 03/28/02*

**MSDS****Material Safety Data Sheet**

From: Mallinckrodt Baker, Inc.  
222 Red School Lane  
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151  
CHEMTREC: 1-800-424-9300

National Response in Canada  
CANUTEC: 613-996-6666

Outside U.S. and Canada  
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

# MAGNESIUM CHLORIDE

## 1. Product Identification

**Synonyms:** Magnesium chloride, hexahydrate; Magnesium chloride, 6-hydrate, crystal

**CAS No.:** 7786-30-3 (Anhydrous); 7791-18-6 (Hexahydrate)

**Molecular Weight:** 203.30

**Chemical Formula:** MgCl<sub>2</sub> 6H<sub>2</sub>O

**Product Codes:**

J.T. Baker: 2444, 2448, 2449, 2450, 4003, 5183

Mallinckrodt: 12131, 5910, 5933, 5954, 5956, 5958, 5960, 7550, 7791

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Magnesium Chloride	7786-30-3	98 - 100%	Yes

## 3. Hazards Identification

**Emergency Overview**

**CAUTION! MAY BE HARMFUL IF SWALLOWED.****SAF-T-DATA<sup>(tm)</sup>** Ratings (Provided here for your convenience)  
-----

Health Rating: 1 - Slight

Flammability Rating: 0 - None

Reactivity Rating: 1 - Slight

Contact Rating: 1 - Slight

Lab Protective Equip: GOGGLES; LAB COAT; PROPER GLOVES

Storage Color Code: Green (General Storage)  
-----**Potential Health Effects**  
-----**Inhalation:**

Inhalation of dust may cause mild irritation to the mucous membranes.

**Ingestion:**

Since magnesium salts are slowly absorbed, abdominal pain, vomiting and diarrhea may be the only symptoms. However, if elimination is blocked by bowel blockage or other reasons, CNS depression, lack of reflexes, hypocalcemia (deficiency of calcium in the blood) may occur.

**Skin Contact:**

No adverse effects expected but may cause minor skin irritation.

**Eye Contact:**

No adverse effects expected but dust may cause mechanical irritation.

**Chronic Exposure:**

No information found.

**Aggravation of Pre-existing Conditions:**No information found.  
-----

## 4. First Aid Measures

**Inhalation:**

Remove to fresh air. Get medical attention for any breathing difficulty.

**Ingestion:**

Give several glasses of water to drink to dilute. If large amounts were swallowed, get medical advice.

**Skin Contact:**

Remove any contaminated clothing. Wash skin with soap and water for at least 15 minutes. Get medical attention if irritation develops or persists.

**Eye Contact:**

Wash thoroughly with running water. Get medical advice if irritation develops.

**Note to Physician:**

IV administration of calcium gluconate will partially reverse the effects of acute magnesium toxicity. Ventricular support with calcium chloride infusion and mannitol forced diuresis has also been successful.

---

## 5. Fire Fighting Measures

**Fire:**

Not considered to be a fire hazard.

**Explosion:**

Not considered to be an explosion hazard. At room temperature the addition of magnesium chloride to furan-2-peroxycarboxylic acid, will cause the acid to explode.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal.

---

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

None established.

**Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):**

For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If

oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

Wear protective gloves and clean body-covering clothing.

**Eye Protection:**

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

**Appearance:**

Colorless flakes or crystals.

**Odor:**

Odorless.

**Solubility:**

167g/100ml water @ 20C (68F)

**Density:**

1.57

**pH:**

5% in water is neutral to litmus.

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

Not applicable.

**Melting Point:**

118C (244F)

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage. By strong ignition is converted into oxychloride.

**Hazardous Decomposition Products:**

When heated to decomposition it emits corrosive hydrochloric acid vapor. When heated to temperatures above 300C (572F) it emits toxic fumes of chlorine gas.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Furan-2-peroxycarboxylic acid. Strong oxidizing agents will release chlorine.

**Conditions to Avoid:**

Heat, moisture, incompatibles.

## 11. Toxicological Information

Oral rat LD50: 8100mg/kg. Investigated as a mutagen.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Magnesium Chloride (7786-30-3)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia

Magnesium Chloride (7786-30-3)	Yes	Yes	Yes	Yes
--------------------------------	-----	-----	-----	-----

-----\Chemical Inventory Status - Part 2\-----

Ingredient			--Canada--	
	Korea	DSL	NDSL	Phil.

Magnesium Chloride (7786-30-3)	Yes	Yes	No	Yes
--------------------------------	-----	-----	----	-----

-----\Federal, State & International Regulations - Part 1\-----

Ingredient	-SARA 302-		-SARA 313-	
	RQ	TPQ	List	Chemical Catg.

Magnesium Chloride (7786-30-3)	No	No	No	No
--------------------------------	----	----	----	----

-----\Federal, State & International Regulations - Part 2\-----

Ingredient	CERCLA	-RCRA-	-TSCA-	
		261.33	8 (d)	

Magnesium Chloride (7786-30-3)	No	No	No	
--------------------------------	----	----	----	--

Chemical Weapons Convention: No      TSCA 12(b): No      CDTA: No  
 SARA 311/312: Acute: Yes      Chronic: No      Fire: No      Pressure: No  
 Reactivity: No      (Pure / Solid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: 1 Flammability: 0 Reactivity: 0

**Label Hazard Warning:**

CAUTION! MAY BE HARMFUL IF SWALLOWED.

**Label Precautions:**

Keep container closed.

Wash thoroughly after handling.

**Label First Aid:**

If swallowed, give large amounts of water to drink. Never give anything by mouth to an unconscious person. Get medical attention.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 3.

**Disclaimer:**

\*\*\*\*\*

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety  
Phone Number: (314) 654-1600 (U.S.A.)



**SSPCo**

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Soil Stabilization Products Co., Inc.

# SOIL STABILIZATION PRODUCTS COMPANY, IN

P.O. Box 2779, Merced, CA 953

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*Environmentally Appropriate Product Technology  
for Pavements, Dust Control, Erosion Control & Soil Stabilization*

## MATERIAL SAFETY DATA SHEET SOIL SEAL® CONCENTRATE

### I. PRODUCT IDENTIFICATION

PRODUCT OR TRADE NAME:	<b>SOIL SEAL® Concentrate</b>
INFORMATION FURNISHED BY:	Soil Stabilization Products Company, Inc.
ADDRESS:	P.O. Box 2779, Merced, CA 95344
DATE PREPARED:	January 9, 2006
EMERGENCY PHONE #:	(800) 523-9992 or (209) 383-3296

Chemical Family	Acrylic Polymer product in water
DOT Shipping Name	Acrylic Polymer product in water
DOT Status	Not regulated

### II. OSHA REGULATED INGREDIENTS

<u>Ingredients</u>	<u>CAS#</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>	<u>Approx. % by Wt.</u>
ACRYLIC POLYMER	Non Haz	NE	NE	46-48%
WATER	Non Haz	NE	NE	54-52%
AMMONIA	7664-41-7	NE	25 ppm	0.2% Max

NOTE: See section XII for other regulatory information

### III. PRECAUTIONARY INFORMATION

- Product is not considered hazardous under normal conditions.
- Direct contact of product with eyes can cause irritation.
- Prolonged or repeated contact with skin may cause irritation.

### IV. EMERGENCY and FIRST AID PROCEDURES

Eye Contact	Flush eyes immediately with water for at least 15 minutes. Consult a physician if irritation persists.
Skin Contact	Wash affected skin areas with soap and water. Wash contaminated clothing before reuse.
Inhalation	Move subject to fresh air.
Ingestion	If swallowed, dilute by giving 2 glasses of water to drink. See a physician. Never give anything by mouth to an unconscious person.
Fire	Product is non-flammable in the liquid state. Use water spray, foam, dry chemical or carbon dioxide on dried product.
Spill	Collect and remove using inert absorbent. Contain spill entering sewers. Notify appropriate agencies.

## V. PHYSICAL CHARACTERISTICS

Physical State	Milky liquid
Boiling Point	>200° F
Weight per gallon	8.85 lbs./gal.
Solubility in Water	Dilutable

---

## VI. PERSONAL PROTECTION EQUIPMENT

Eyes	Wear chemical safety goggles to reduce the potential for eye contact. Eye wash fountain should be available.
Skin	Use impermeable chemical gloves and wear appropriate protective clothing. Launder contaminated clothing before reuse.
Respiratory	Respiratory protection is not normally required. Use NIOSH/MSHA approved respirator if conditions warrant.
Ventilation	Standard industrial ventilation is recommended.

---

## VII. FIRE PROTECTION

Flash Point	Non-flammable
Extinguishing media.	Non-flammable in Liquid state. Use water spray, foam, dry chemical or carbon dioxide on dried product.
Unusual Fire and Explosion Hazard	Personnel exposed to product of combustion should wear self-contained breathing apparatus and full protective equipment. Containers exposed in a fire should be cooled with water to prevent vapor pressure buildup leading to a rupture.

---

## VIII. REACTIVITY INFORMATION

Stability	Stable under normal conditions
Incompatibility	Not Established
Hazardous Decomposition	Combustion of the dried product can give off oxides of carbon and nitrogen.
Hazardous Polymerization	Will not occur.

---

## IX. EFFECT OF OVEREXPOSURE

Eyes	Eye contact with liquid may cause irritation.
Skin	Repeated or prolonged skin contact with liquid may cause irritation.
Inhalation	No expected effects.
Chronic	No anticipated effects. This product does not contain regulated levels of NTP, IARC or OSHA listed carcinogens.

Existing Health Conditions Affected by Exposure - No known effects on other illnesses.

## X. SPILL and DISPOSAL INFORMATION

- Small Spills · Should be contained using absorbent material, such as clay, soil or any commercially available absorbent.
- Large Spills · Should be diked to prevent further movement and reclaim into recovery of salvage drums for disposal.
- Disposal · This product does not meet the definition of hazardous waste under the U. S. EPA Hazardous Waste Regulations 40 CFR 261. Consult your state or local authorities for proper disposal in the event more restrictive requirements apply.
- 

**XI. STORAGE** Protect from freezing - product stability may be affected.

---

## XII. REGULATORY INFORMATION

**TOSCA** · This product meets the compositional requirements of the Toxic Substances Control Act and contains only chemical ingredients that are listed on the TOSCA inventory.

**SARA Title III, Sec. 313** · This product does not contain toxic chemical(s) at or above the de minimus concentrations subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986(SARA) and 40 CFR part 372.

---



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**SOILTAC®**  
 Soil Stabilizer &  
 Dust Control Agent

## MATERIAL SAFETY DATA SHEET

### SECTION 1 - MATERIAL IDENTIFICATION

**PRODUCT NAME** SOILTAC\*  
**MANUFACTURER** \*SOILTAC is a registered trademark of Soilworks, LLC.  
 Soilworks, LLC.  
 681 North Monterey Street, Suite 101  
 Gilbert, Arizona 85233-8318 USA  
[www.soilworks.com](http://www.soilworks.com)  
 800-545-5420  
**TELEPHONE NUMBER** 800-545-5420  
**ONLINE INFORMATION** [www.Soiltac.com](http://www.Soiltac.com)  
**EMERGENCY TELEPHONE NUMBERS** 800-545-5420 (National & International)  
**REVISION DATE** March 2006

### EMERGENCY OVERVIEW

**PHYSICAL FORM** Mobile liquid  
**COLOR** White (transparent once cured)  
**ODOR** Mild  
**HAZARDS** There are no known health hazards.  
**EXTINGUISHING MEDIA** The product will only burn after the water it contains is driven off.  
**C.A.S. CHEMICAL NAME** Mixture  
**SYNONYMS** Soil stabilizer, soil stabilization agent, soil solidifier, soil amendment, soil additive, soil crusting agent, dust control agent, dust inhibitor, dust palliative, dust suppressant, dust retardant  
**CHEMICAL FAMILY** Vinyl Acetate Copolymer Emulsion  
**EMPIRICAL FORMULA** Mixture  
**INTENDED USE** Soil stabilization, soil solidification, fugitive dust control, dust suppression, dust abatement, tackifier, dust abatement, PM<sub>10</sub> and PM<sub>2.5</sub> air quality control and erosion control  
**REVISION NOTES** None

### SECTION 2 - INGREDIENTS

	%	CAS Number and Chemical Name
1.	50-65	Vinyl Acetate Copolymer
2.	50-35	7732-18-5 Water
3.	< 0.5	108-05-04 Vinyl Acetate Monomer

The composition is a trade secret. Contains no other components or impurities which will influence the classification of the product.

### SECTION 3 - HEALTH HAZARDS

#### ROUTES OF EXPOSURE

Eye Contact  
 Skin Contact  
 Ingestion  
 Inhalation

#### EXPOSURE STANDARDS

See Section 2 for exposure standards on ingredients. Maintain air contaminant concentrations in the workplace at the lowest feasible levels. Minor components will migrate into the container headspace. Levels in excess of the TLV's or PEL's can accumulate in non-vented container headspaces. Open drums in a well ventilated space. The principal volatile component is water. Minor volatile components are identified in Section 2 "Ingredients".

#### HEALTH HAZARDS

There are no known health hazards.

#### TARGET ORGANS

None known

#### SIGNS AND SYMPTOMS OF EXPOSURE (Acute effects)

There are no known signs or symptoms of exposure.

#### SIGNS AND SYMPTOMS OF EXPOSURE (Possible Longer Term Effects)

No known effects

#### MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE

None known





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## SECTION 4 - FIRST AID

### EYE CONTACT

Rinse immediately with plenty of water.

### SKIN CONTACT

Remove contaminated clothing and shoes. Wash affected area with soap and water.

### INHALATION

Move patient to fresh air. If breathing has stopped or is labored give assisted respiration (e.g. mouth-to-mouth). Supplemental oxygen may be indicated. Seek medical advice. Prevent aspiration of vomit. Turn victim's head to the side.

### INGESTION

If swallowed, call a physician immediately. Remove stomach contents by gastric suction or induce vomiting only as directed by medical personnel. Never give anything by mouth to an unconscious person.

## SECTION 5 - FIRE AND EXPLOSION DATA

<b>FLASH POINT (closed cup)</b>	No Data
<b>UPPER EXPLOSION LIMIT (UEL)</b>	No Data
<b>LOWER EXPLOSION LIMIT (LEL)</b>	No Data
<b>AUTOIGNITION TEMPERATURE</b>	No Data
<b>FIRE HAZARD CLASSIFICATION (OSHA/NFPA)</b>	Non-Combustible
<b>EXTINGUISHING MEDIA</b>	

The product will only burn after the water it contains is driven off. For dry polymer use water or carbon dioxide. Product does not burn. Aqueous solution is not flammable.

### SPECIAL FIRE FIGHTING PROCEDURES

No special procedures required. The product, as distributed, is noncombustible.

### UNUSUAL FIRE AND EXPLOSION HAZARDS

When dried polymer burns, water (H<sub>2</sub>O), carbon dioxide (CO<sub>2</sub>), carbon monoxide (CO) and smoke are produced.

## SECTION 6 - ACCIDENTAL RELEASE MEASURES

### CONTAINMENT TECHNIQUES (Removal of ignition sources, diking etc)

Stop the leak, if possible. Ventilate the space involved.

### CLEAN-UP PROCEDURES

Wear suitable protective equipment. If recovery is not feasible, admix with dry soil, sand or non-reactive absorbent and place in an appropriate chemical waste container. Transfer to containers by suction, preparatory for later disposal. Place in metal containers for recovery or disposal. Flush area with water spray. Wash contaminated property (e.g., automobiles) quickly before the material dries. For large spills, recover spilled material with a vacuum truck.

### OTHER EMERGENCY ADVICE

Spilled polymer emulsion is very slippery. Use care to avoid falls. A film will form on drying. Remove saturated clothing and wash contacted skin area with soap and water. Product imparts a milky white color to contaminated waters. Foaming may result. Sewage treatment plants may not be able to remove the white color imparted to the water.

## SECTION 7 - HANDLING AND STORAGE

### STORAGE

Keep away from: oxidizers. Avoid freezing temperatures during storage.

Minimize contact with atmospheric air to prevent inoculation with microorganisms.

### HANDLING

Use only in well-ventilated areas. Avoid contact with eyes. Avoid breathing vapors. Avoid contact with skin. When using, do not eat, drink or smoke.

### OTHER PRECAUTIONS

No special precautions required.

## SECTION 8 - PERSONAL PROTECTION / EXPOSURE CONTROLS

### EYE PROTECTION

Chemical safety glasses.

### HAND PROTECTION

Rubber Gloves. The breakthrough time of the selected glove(s) must be greater than the intended use period.

### RESPIRATORY PROTECTION

Not required under normal use.

### PROTECTIVE CLOTHING

No specific recommendation.

### ENGINEERING CONTROLS

Maintain air concentrations in work spaces in accord with standards outlined in Sections 2 and 3.





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**WORK AND HYGIENIC PRACTICES**

Minor components will migrate into the container headspace. Levels in excess of the exposure limits can accumulate in non-vented container headspaces. Under normal conditions of use in a well-ventilated space, the concentration of minor components in the workplace air will not exceed the exposure limits.

**SECTION 9 - TYPICAL PHYSICAL AND CHEMICAL PROPERTIES**

<b>PHYSICAL FORM</b>	Mobile liquid
<b>COLOR</b>	White (transparent once cured)
<b>ODOR</b>	Mild
<b>pH</b>	4.0-6.0
<b>VAPOR PRESSURE</b>	18.65 (mm Hg at 21°C (70°F))
<b>VAPOR DENSITY (Air = 1)</b>	Of water vapor
<b>BOILING POINT</b>	>100.00°C (>212.00°F)
<b>SOLUBILITY IN WATER</b>	Completely (100%) (until cured)
<b>SPECIFIC GRAVITY (Water = 1)</b>	1.04-1.10
<b>MOLECULAR WEIGHT</b>	Mixture

**SECTION 10 - STABILITY AND REACTIVITY**

**CHEMICAL STABILITY**

Stable at ambient temperatures. Coagulation may occur following freezing, thawing or boiling.

**CONDITIONS TO AVOID (if unstable)**

Not applicable

**INCOMPATIBILITY (Materials to Avoid)**

Mineral acids (i.e. sulfuric, phosphoric, etc.). Alkalis (i.e. Sodium or Potassium Hydroxide etc.).

**HAZARDOUS DECOMPOSITION PRODUCTS (from burning, heating, or reaction with other materials).**

Depending upon formulation conditions (such as pH>7), the level of acetaldehyde may increase as a result of hydrolysis of residual vinyl acetate monomer. Carbon Monoxide in a fire. Carbon Dioxide in a fire. Aldehydes. Acetic Acid.

**HAZARDOUS POLYMERIZATION**

Will not occur

**CONDITIONS TO AVOID (if polymerization may occur)**

Not applicable

**SECTION 11 - TOXICOLOGICAL PROPERTIES**

**ACUTE ORAL TOXICITY**

No Data

**ACUTE DERMAL TOXICITY**

No Data

**ACUTE INHALATION TOXICITY**

No Data

Components: Vinyl Acetate Monomer LC50 (1 h): 5,656 ppm Species: Rat

**OTHER ACUTE EFFECTS**

No Data

**CHRONIC/SUBCHRONIC DATA**

This product contains small amounts of vinyl acetate monomer. ACGIH evaluated vinyl acetate (1993) as an A3 Animal Carcinogen: Available evidence suggests that the agent is not likely to cause cancer in humans except under uncommon or unlikely routes of exposure. The International Agency for Research on Cancer (IARC) published a monograph on vinyl acetate (1995). In this monograph IARC indicates "there is inadequate evidence in humans for carcinogenicity of vinyl acetate. There is limited evidence in experimental animals for carcinogenicity of vinyl acetate." Normally, this lack of conclusive evidence would place a substance in the IARC Category 3 classification (Not classified as a human carcinogen). However, because vinyl acetate is metabolized to acetaldehyde, which has an IARC 2 B (Possibly carcinogenic to humans) classification, it also has been listed under Category 2B.

**SECTION 12 - ECOLOGICAL INFORMATION**

**ECOTOXICITY**

Common Name	Species	Test	Result	Concentration
Green Algae	Raphidocelus Subcapitata	96-hr chronic LC50	>1,000	Undiluted
Fathead Minnow	Pimephales Promelas	96-hr acute LC50	>1,208	Undiluted
Rainbow Trout	Oncorhynchus Mykiss	96-hr acute LC50	>1,000	Undiluted

**ENVIRONMENTAL FATE**

No Data

**ADDITIONAL INFORMATION**

No Data





**SECTION 13 - DISPOSAL CONSIDERATIONS**

**WASTE DISPOSAL**

Comply with all Federal, State and Local Regulations. For small quantities (less than 100 gallons): Disposal to municipal or industrial wastewater treatment plants is normally acceptable. Obtain approval from these authorities before disposal. The product does impart a white, milky color to water, which may not be removed or sufficiently diluted by the treatment facility. The product may also cause foaming when agitated. The product can be chemically or biologically degraded. For large quantities: Disposal through licensed waste disposal facilities is suggested. The product can be incinerated, though chemical or biological treatment is sufficient. Chemical precipitation/coagulation can be used to facilitate removal of solids (consult manufacturer for detailed procedure). NOTE: As supplied or diluted, product material (foam included), when splashed on automobiles or other personal property, is difficult to remove if allowed to dry.

**SECTION 14 - TRANSPORT INFORMATION**

<b>DOT NON-BULK SHIPPING NAME</b>	Refer to Bill of Lading - Not DOT Regulated // Keep From Freezing // Not dangerous goods
<b>DOT BULK SHIPPING NAME</b>	Refer to Bill of Lading.
<b>IMO SHIPPING DATA</b>	Refer to Bill of Lading.
<b>ICAO/IATA SHIPPING DATA</b>	Refer to Bill of Lading - Not IATA Regulated // Keep From Freezing // Not dangerous goods
<b>CFR</b>	Not Regulated // Keep From Freezing // Not dangerous goods
<b>IMDG</b>	Not Regulated // Keep From Freezing // Not dangerous goods
<b>CTC</b>	Not Regulated // Keep From Freezing // Not dangerous goods

**SECTION 15 - REGULATORY INFORMATION**

**TOXIC SUBSTANCES CONTROL ACT (TSCA)-**

All components are included in the EPA Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

**TOXIC SUBSTANCE CONTROL ACT (TSCA) 12(b) COMPONENT(S)**

None

**OSHA Hazard Communication Standard (29CFR1910.1200) hazard class(es)**

None

**EPA SARA Title III Section 312 (40CFR370) hazard class**

None

**EPA SARA Title III Section 313 (40CFR372) toxic chemicals above "de minimis" level are**

Vinyl Acetate Monomer

**US. California Safe Drinking Water & Toxic Enforcement Act (Proposition 65)**

WARNING! This product contains a chemical known in the State of California to cause cancer. Acetaldehyde

**WHMIS HAZARD CLASSIFICATION**

None

**WHMIS INGREDIENT DISCLOSURE LIST**

None

**WHMIS SYMBOLS**

None

**EINECS / ELINCS MASTER INVENTORY (EU)**

Included on EINECS inventory or polymer substance, monomers included on EINECS inventory or no longer polymer

**DSL (Canada)**

Included on inventory

**AICS (Australia)**

Included on inventory

**ENCS (Japan)**

Included on inventory

**ECL (South Korea)**

Included on inventory

**SEPA (China)**

Included on inventory

**SECTION 16 - OTHER INFORMATION**

**HMIS Rating**

Health	: 1
Flammability	: 0
Physical Hazard	: 0

