

DOCKETED

Docket Number:	08-AFC-08A
Project Title:	Hydrogen Energy Center Application for Certification Amendment
TN #:	201455
Document Title:	Responses to Wasco Coal Terminal Supplemental Environmental Analysis Data Requests A218-A253
Description:	N/A
Filer:	URS
Organization:	URS Corporation
Submitter Role:	Applicant Consultant
Submission Date:	12/19/2013 4:07:09 PM
Docketed Date:	12/19/2013

**HYDROGEN ENERGY
CALIFORNIA (08-AFC-8A)**

**Responses to
California Energy Commission Staffs
Wasco Coal Terminal Supplemental
Environmental Analysis Data
Requests A218 - A253**

Due December 20, 2013

Technical Area: Air Quality/Greenhouse Gases
Author: William Walters
Nancy Fletcher

BACKGROUND:

Staffs California Environmental Quality Act (CEQA) review of the Hydrogen Energy California (HECA) project and the potential environmental impacts of receiving coal for the project from Savage's Wasco Coal Terminal, requires additional specific information from Savage Coal to understand the Conditional Use Permit (CUP) (CUP 489/87, Resolution No. 87-11) modification request. Staff needs to understand all of the CUP conditions that Savage Coal will request to be modified, as well as other conditions that need to be modified to address changes in regulations or standard nomenclature (such as KCAPCD is now SJVAPCD) (Kern County Air Pollution Control District is now San Joaquin Valley Air Pollution Control District) or the effects of the HECA project on the Wasco Coal Terminal operation (such as changes in the conditions covering acceptable truck routes). While certain CUP conditions have been addressed in the Wasco Coal Terminal Supplemental Environmental Analysis (SEA) (TN 200797), such as CUP condition 86, the specific condition text edit requests for the other CUP conditions have not been provided. Staff needs to understand the entirety of the CUP modification request to complete our CEQA evaluation.

DATA REQUEST

A218. Please provide an underline/strikeout version of the current CUP conditions that shows all of the requested modifications to those conditions with new text underlined and deleted text in strike out.

The application on file with the City of Wasco is seeking two specific modifications. First, the alignment of the maximum annual volume throughput allowed at the terminal in the CUP (900,000 tons per year currently), with the maximum volumes allowed in the SJVAPCD Air Permits (1,500,000 tons per year). Second, the change in terminology of product permitted to be handled from bituminous coal to non-metallic minerals, which is the terminology used for coal and other non-metallic minerals in the SJVAPCD air permit. We also anticipate that the City will add provisions related to the portion of the proposed truck route for HECA that is within the city limits, defining it as an additional route allowed to serve our customers. The city may also address other items that result from the application review process and remove outdated provisions that are no longer applicable.

BACKGROUND:

Staff needs to clarify operational characteristics of the coal terminal that were not specifically addressed in the Wasco Coal Terminal Supplemental Environmental Analysis (SEA).

DATA REQUESTS

A219. The SEA indicates that currently 80 railcars take 32 hours to process and that 111 HECA railcars would take 35 hours. Why is the per railcar average unloading time assumed to be reduced from the current 24 minutes per railcar to 18.9 minutes per railcar, an over twenty percent reduction?

Savage reviewed historical unloading times at the terminal when consistent sets of specified coal railcars were used to deliver coal to its' previous customers. Unloading times were typically 15-20 minutes per railcar, including all railcar movements between the storage tracks and the unloading building. Railcars are typically moved between the train storage track and the unloading building in strings of 20 railcars. Applying the average time of 17.5 minutes per car to a 111 car train and allowing the additional time needed for two additional movements of car strings, results in an average unloading time of approximately 35 hours when using consistent sets of specified coal cars.

Actual unloading times for each train will be affected by the time of day, weather and rail and vehicle traffic to ensure safe movements of cars between the storage tracks and the unloading building.

A220. Page 2-4 of the SEA notes that the route may have to go through the city of Wasco depending on the High Speed Rail (HSR) project. There are several restrictions regarding travel routes in the CUP conditions, so does the CUP actually allow the travel route indicated on page 2-4? What additional requests for CUP condition changes will be made for the truck travel route with or without the HSR project, or otherwise?

The defined route for the Project uses either Wasco Avenue-to-Kimberlina or Wasco Avenue—to-Poso Avenue, to access State Highway 43 South. This route pertains only to the HECA Project and is not included in the current CUP. Savage is working with the city to address route and traffic concerns within its boundaries. The defined Project route will also be included in the revised CUP.

Savage formally voiced its concerns to HSR regarding potential impacts on its existing and proposed operations to serve HECA, and requested that HSR evaluate mitigation measures to ensure that the existing and planned operational routes will not be affected. In addition, Savage and the City are working together with the HSR to ensure that any travel route restrictions will not impact the Project.

A221. The truck trip requirements listed in the SEA regarding CUP condition changes do not match the assumptions provided by the applicant. Specifically, the average daily number of truckloads listed by the applicant based on their average and maximum coal trucking throughput estimates, correcting for a larger load of 27 tons/truck for 4,580 tons/day of coal (333 days per year transporting), would be 170 truckloads per day, while the applicant-stipulated maximum coal trucking amount of 6,500 tons/day would require 241 truckloads per day. Please clarify this discrepancy.

The truck trip requirements listed in the SEA, as related to CUP changes (150 truckloads average), are based upon the terminal's permitted capacity of 1.5 million tons per year delivered over 365 days.

The Project's maximum daily coal throughput of 6,500 tons was a conservative worst case number that was used for technical evaluation purposes. Actual use is expected to be less.

The Project's average daily consumption of coal is 4,580 tons. If each truck's capacity is 27 tons, then on average, 170 truckloads would need to be delivered, based on 333 days of delivery days per year. The analyses in the Amended AFC used the same average daily consumption of coal of 4,580 tons/day, with a slightly smaller truck capacity of 25 tons, therefore estimating that 184 truckloads would need to be delivered per day on the same basis. Since the analyses in the Amended AFC were based on more truckloads delivered each day, these conservatively overestimated the impacts associated with vehicular traffic.

A222. It is unclear if the HECA facility, given its noted 333 days per year operating schedule, would have staff available to receive coal shipments 365 days per year. Also, given the higher costs to operate 365 days per year, weekend and holiday labor rates, is a 365 day/year schedule as noted in the SEA actually reasonable?

The current in-practice loading capability is 160 truckloads per day. The Project's annual needs of 1.5 million tons would be delivered in 347 days on that basis. HECA will operate on a 365 day basis and will have staff available to receive coal shipments on the needed schedule.

A223. A few questions arise given the average trucking hourly volumes of 7 to 8 truckloads per hour noted in the SEA and the maximum loading potential of 9 truckloads per hour (6.66 minutes per truck) noted in the SEA.

- a. What is the real in practice daily and hourly averaged maximum for truck loading?

Current in-practice hourly loading capability is 8 truckloads per hour, 20 loading hours per day. This equates to 160 loads per day (~4,320 tons).

How would the facility meet the HECA noted daily average and maximum throughput obligations without expansion of the truck loading facilities?

The loading process control system timing could be optimized, if needed, to achieve 10 additional loads per day, or a total of 170 truckloads (4,590 tons) to meet the projects daily consumption without expansion of the truck loading facilities.

At 6.66 minutes per truck and 20 hours per day, we calculate a maximum daily truck loading limitation of 180.2, or 180 truckloads ($[20 \times 60]/6.66$). This conflicts with the 182 truckloads per day value listed in the SEA. Please confirm the maximum daily truck throughput value based on the answer to subpart a above.

6.66 minutes represents the theoretical maximum loading time used to calculate the potential maximum impact for permitting purposes. 182 truckloads (based on 5,000 tons and 27+ tons per load) is the maximum permitted loading limit per day (5,000 tons calculated, using the terminals allowable loading window, 20 hours times 250 tons per hour, the loading capacity).

A224. What is the empty truck & trailer combined weight? Please clarify if the empty truck and trailer combination is less than 13 tons.

The tare weight of the truck & trailer combinations is proprietary commercial information. The fleet is designed specifically for application to coal movements and operates within all existing highway laws, maximum gross vehicle weight and bridge formulas.

BACKGROUND:

Staff needs clarification on specific technical issues within the SEA, such as information noted to be provided that doesn't appear to exist in the SEA, as well as issues regarding the air quality calculations within the SEA.

DATA REQUESTS

A225. It is noted on page 3-3 that the AERMOD air dispersion modeling output files are provided in Appendix A, but we cannot find any AERMOD output files within the 6 page Appendix A, only a summary of the modeling results. Please provide the noted AERMOD output files.

Please see Response Attachment A225.

A226. *An incorrect* EMFAC2011 truck category was used in the SEA emissions calculations. The calculations used the "T7 public"; however, the Wasco Coal **Terminal is not a public agency, so the "T7 Tractor" (or maybe "T7 Single") category should have been used. Please determine if correcting the truck category would create a significant difference in the truck emissions presented in the SEA.**

The vehicle category description of "Heavy-Heavy Duty Diesel Public Fleet Truck" was applied as a typical "general public" fleet mix not a "public agency" fleet mix. We have received clarification from CARB confirming that "T7 Public" should only be applied to vehicles with exempt license plates. When considering the 2 alternatives listed in the comment, "T7 Tractor" or "T7 Single", the "T7 Tractor" category would be worst case. After analyzing the "T7 Tractor" fleet emission rates it was concluded that these changes would have no effect on the conclusions of the original analysis. The effect of substituting "T7 Tractor" on the Project's overall emissions would be: NOx would decrease by 1% and CO, PM10, and PM2.5 emissions would increase by 4.92%, 0.69%, and 1.85% respectively. None of these emissions increases would cause a change to the significance findings from the original analysis; the Project's emissions levels would remain at less-than significant/no adverse effect.

A227. It appears that the onsite truck travel does not include road dust emissions, which due to likely dusty conditions onsite would be higher than typical paved road dust emissions. Please calculate and add the road dust emissions to the emissions totals.

The Wasco Coal Terminal on-site coal delivery truck routes are all on paved roadways. Even if the paved roadways were to have some fugitive dust emissions blown onto them from operations, the emissions would either be already included in the fugitive emissions estimates from the operations or be insubstantial when considered with the overall projects emissions to cause any changes to the less than significant findings in the original analysis. In addition, the Wasco Coal Terminal site will operate in accordance with all SJVAPCD Rules and Regulations regarding dust control on-site.

BACKGROUND:

Staff needs written clarification of information requests previously provided to Savage, some of which were verbally responded to in the PSA Workshop, that were not formally addressed in the Wasco Coal Terminal Supplemental Environmental Analysis (SEA).

DATA REQUESTS

A228. Given the round trip distance, CUP condition route limitations, and associated round trip time in route to/from the HECA facility:

- a. **How many total coal delivery trucks (trucks not trips) would need to be dedicated to this project.**

The current truck operation plan will require 13 production units to deliver HECA's annual needs, 1.5 million tons in 365 days, with additional rotation units for planned maintenance windows.

- b. **How many coal delivery trucks does the Wasco Coal Terminal currently have dedicated to the terminal?**

The fleet required to meet historical needs was 4-6 units historically.

A229. What is the loss in total throughput capacity due to complying with the CUP conditions, such as including reducing trips during school bus active periods?

The current truck operation plan is configured to meet a maximum annual volume of 1.5 million tons per year delivering coal 24 hours per day, 365 days per year. Savage does not anticipate an impact in total throughput capacity operating on that basis.

A230. Outside of the CUP and air quality permit conditions, are there any other laws, regulations, etc. that limit throughput or hours of operation. Such as, are there any limits on overnight operations to meet county or local noise regulations?

No other limits that will limit the terminal's ability to operate at the maximum volumes limits of the Permit to Operate have been identified.

A240. Where are the full and empty railcars stored, as it doesn't appear that there is enough siding track adjacent to the unloading site to hold a full 100-plus railcar unit train? Also, describe any changes to the track siding availability if the high speed rail project is built.

Please see Response Attachment A240. An illustrative map is attached, identifying the general location and capacity of existing train storage sidings and ladder track systems used by the Wasco Coal Terminal. HSR has indicated that all existing BNSF tracks and sidings will be accessible if the high speed rail project is built.

BACKGROUND:

Staff has proposed conditions of certification related to rail and trucking operations, and may advocate changes to those conditions to ensure that the mitigation levels are adequate to protect public health regardless of the coal-receiving site. These conditions include requirements for:

DATA REQUESTS

A241. Describe the onsite rail operations to meet Tier 4 engine emission standards for the switching locomotive (assuming Tier 4 is available at the time the project needs to acquire the switching locomotive).

The analysis of the Tier 2 switch engine showed less than significant impacts.

A242. Staff has proposed a condition of certification that requires that the applicant contract with haulers that only use trucks meeting 2010 model year emissions standards. This condition would apply to the Savage trucks.

The current truck operation plan envisions using trucks meeting 2010 model year emissions standards.

Staff needs Savage Coal to provide comments on any technical feasibility issues they would have, not financial issues, to comply with such conditions.

Savage has not identified any technical feasibility issues that would affect its ability to provide trucks complying with 2010 model year standards.

DATA REQUEST

A243. Please identify technical feasibility issues related to complying with staffs recommended Condition of Certification AQ-SC7 for haul trucks and staffs Condition of Certification

AQ-SC12 if revised to require coal rail receiving onsite or offsite to use switch locomotives that comply with Tier 4 emissions standards.

The analysis of the Tier 2 switch engine showed less than significant impacts.

Technical Area: Socioeconomics
Author: Lisa Worrall

BACKGROUND

Staff has questions about the additional operational staff that would need to be employed at the Wasco Coal Terminal to serve HECA's coal needs under the non-railroad spur alternative (coal trucking).

DATA REQUESTS

A244. Page 2-3 of the Wasco Coal Terminal Supplemental Environmental Analysis (SEA) (TN 200797), states that the number of operations employees would increase from four (as of 2012) to 55 to 60 to service the HECA project. What trade types and how many of each trade type would need to be employed at the Savage Services Corporation coal transloading facility to serve the HECA project?

The most recent projection of employees required at the Wasco Coal Terminal to serve HECA, based on 1.5 million tons throughput is:

Heavy Truck Drivers	45
Terminal Operators	16
Truck Service Techs	5

If any skilled trades would be employed, please note the trades and any clarifying information that can help staff match the trade type with available labor, such as those tracked by the Employment Development Department using the Bureau of Labor Statistics Standard Occupation Classification codes (SOC).

Heavy Truck Drivers
Heavy Equipment Service Technicians
Switch Locomotive Operators

- a. If non-skilled trades would be employed, please provide at least a general job type and number of employees by job type.

General Maintenance and Repair Men
General Maintenance and Repair Helpers

A245. Page 3-11 of the SEA states that the finding from the HECA/OEHI PSA/DEIS determined no substantial direct, indirect, or cumulative adverse effects on project area housing, schools, law enforcement services, and parks. Then the SEA continues by saying that the findings from the HECA/OEHI PSA/DEIS were further "tested" in the immediate vicinity of the Wasco Coal Terminal from an increase in operations to full capacity. Staff would like to know more about the increase in operations to full capacity, specifically, when and for how long were operations increased to full capacity? Also, historically, has the Wasco Coal Terminal operated at full capacity, and if so, when did it operate at full capacity (at least the most recent case) and for how long was this operation sustained?

The further "testing" conducted in the immediate vicinity of the Wasco Coal Terminal to project the impact of an increase in operations to full capacity was specifically measured in the environmental areas of air quality, public health and noise (Sections 3.1, 3.5, and 3.6 respectively). As shown in Sections 3.1, 3.5 and 3.6, there were findings of no adverse effects in the areas of air quality, public health and noise. The analysis parameters were provided in Sections 3.1, 3.5 and 3.6.

Further, as shown in Table 2-1, historic operations never reached full capacity of the Wasco Coal Terminal.

Technical Area: Cultural Resources
Author: Melissa Mourkas
Elizabeth A. Bagwell
Gabriel Roark

BACKGROUND

Socioeconomics Figure 3 (attached) identifies what is presumed to be the most likely truck transportation route for the HECA project. This figure depicts a truck route leaving Wasco at the Savage Coal facility and travelling southbound on State Highway 43 to Stockdale Highway. Staff has determined through preliminary research that there are several built environment historic resources along State Highway 43 and in downtown Wasco within the standard 0.5 mile Project Area of Analysis (CEQA)/Area of Potential Effect (NEPA) (PAA/APE) to each side of linear routes in rural areas in use for the HECA project. There may be other resources that staff is unaware of at this time. Without an understanding of the nature of historic-age resources within the PAA/APE sphere of influence of the transportation routes and coal facility, staff is unable to determine the potential for impacts to those resources. Staff has concerns about impacts on integrity of the resources. Areas of concern include but are not limited to **1)** integrity of feeling, association setting and materials as defined by California Register and National Register Criteria for Evaluation for historical resources/historic properties; **2)** structural integrity from vibration from the increase in heavy truck traffic; and **3)** structural integrity of any historic roads or bridges along the transportation route(s).

Wasco:

The City of Wasco has a downtown Historic Downtown Overlay District (Ordinance # 2000-442, May 16, 2000), much of which is within 0.5 mile radius of the railroad, Savage Coal facility, and the proposed truck route (see **Cultural Resources Figure 13** - attached). In addition, located immediately due north of the Savage Coal facility is what is known as the Labor Camp. The Labor Camp currently provides seasonal and year-round migrant housing administered by the county. Historically, it was developed in 1942 as a camp for workers in the Guayule plantation fields during WWII after Congress passed the Emergency Rubber Act. The Labor Camp has the potential to be considered eligible for listing on the CRHR/NRHP as an historical resource under Criterion 1/A: association with broad patterns of our history (WWII).

Shafter:

Within 0.5 mile of the proposed truck route along State Highway 43 (Great Central Valley Highway) are two historic buildings listed on the National Register of Historic Places, (see Cultural Resources Figure 14 - attached). The Shafter Depot Museum is located directly on State Highway 43 and the Green Hotel is located one-block from the highway on James Street.

In addition, staff has identified at least one historic-age bridge on State Highway 43 which crosses the Goose Lake Slough south of Shafter. This bridge is identified by Caltrans as #50-0077 and dates to 1951. While Caltrans found the bridge to be not eligible for listing on the National Register in its 1986 survey, staff recommends these evaluations for historical significance be updated when a resource becomes older than 50 years. The Goose Lake Slough bridge is now 62 years old and therefore should be re-evaluated.

DATA REQUESTS

A246. Staff requests that applicant provide a cultural resources literature search and survey along the proposed truck route, identifying historic-age built environment resources 45 years or older within the established PAA/APE for linear facilities of the proposed HECA project, which is not less than 0.5 mile on each side of linear facilities.

A247. The survey shall include the recordation of the resources on a State of California Parks and Recreation Form DPR 523a (Primary Record) and DPR 523j (Location Map) at a minimum, with additional DPR forms as needed to reflect the nature of the resource being recorded. These resources may include but are not limited to: railroad lines, transmission lines, canals and ditches, bridges, buildings, farm structures, trails and roads, major plantings (for example, a palm-lined boulevard) and districts such as farms and commercial/industrial areas. The Wasco Labor Camp may be recorded as a district without calling out individual contributing elements to the district on separate 523a forms. Other districts may be treated in the same manner.

A248. Please provide an assessment of whether the proposed transportation route, with its increased truck and railroad traffic in Wasco, would be in compliance with the Historic Downtown Overlay District. If not, what mitigation might be proposed to bring it into compliance with Ordinance # 2000-442?

A249. Please provide an assessment of whether the proposed transportation routes not previously surveyed or evaluated would impact any identified historic built environment resources in terms of setting, location, association, feeling, design, materials or workmanship. For instance, changes in design, materials and workmanship might include structural changes required to withstand heavier loads, vibration or noise. Changes in setting or association might be caused by increased traffic or rerouting of a roadway adjacent to or within a resource set in a rural landscape.

Applicant understands from the CEC that no response is required to A246-249.

BACKGROUND:

Although the Wasco Coal Terminal Supplemental Environmental Analysis (SEA; TN 200797) states that "service of the HECA Project would not require construction of any new systems at the Wasco Coal Terminal, including any new coal storage silos", the use of the existing terminal and silos for the HECA project trigger the environmental review of the facility and thus staff must assess the use and risk posed by the presence and use of any hazardous materials stored, used, or transported to the Wasco Coal Terminal. Merely stating within the SEA that the facility is "in compliance with all applicable rules and regulations for storing and handling hazardous materials Coal Terminal" is not adequate for a CEQA analysis. Staff needs additional information to ensure that the use, storage, and transportation of hazardous materials at the coal terminal do not pose a significant risk to the public.

DATA REQUESTS

A250. A list of all hazardous materials that will be used, stored, or transported to the coal facility during operations when serving the HECA project, including chemical name, Chemical Abstracts Service (CAS) number, concentration, amount in pounds or gallons, health effects, reactivity, fire danger, means of storage (e.g., above-ground tank, tote, container for solids, etc.), and emergency response for spills.

Please see Response Attachments to A250 and Emergency Response Plan including in Response Attachments to A252.

A251. Describe the safety measures installed and implemented, including Total Dust Management procedures and measures to comply with the OSHA Combustible Dust National Emphasis Program (CPL 03-00-008 March 11, 2008), instituted to prevent explosions in the silos due to the presence of coal dust.

Please see Response Attachments to A251.

Technical Area: Worker Safety and Fire Protection
Author: Dr. Alvin Greenberg

BACKGROUND:

Although the Wasco Coal Terminal Supplemental Environmental Analysis (SEA; TN 200797) states that "the existing Coal Terminal operations are currently and have always been in compliance with Occupational Safety and Health Administrative (OSHA) rules and regulations since it opened for operations, Savage Services Corporation maintains a general Health and Safety Plan for all of its facilities" and that "with increased operations at the Coal Terminal, all health and safety operations compliance would be maintained", the use of the existing terminal for the HECA project triggers the environmental review of the facility and thus staff must assess compliance with all occupational health and safety and fire protection laws, ordinances, regulations, and standards (LORS) and risks posed to workers at the Wasco Coal Terminal. Merely stating within the SEA that the facility is in "compliance with OSHA rules and regulations" is not adequate for staff's analysis. Staff needs additional information to ensure \ha\ the coal terminal will be in LORS compliance regarding worker safety and fire protection and would not pose a significant risk to workers.

DATA REQUEST

A252. Please provide a copy of Savage Services Corporation's Health and Safety Plan (H&S Plan) for the Waco Coal Terminal and any supplemental information (if not included in the H&S Plan) regarding an Emergency Action Plan, Fire Protection Plan (including fire detection and suppression systems), worker Heat Stress Plan, emergency access points onto the coal terminal site other than the main gate, the location and number of automatic external defibrillators (AEDs) on the site, and training and maintenance procedures.

Please see Response Attachments A251 and A252

Technical Area: Public Health
Author: Dr. Alvin Greenberg

BACKGROUND

The Wasco Coal Terminal Supplemental Environmental Analysis (SEA) (TN 200797) recognizes that "increasing operations at the Wasco Coal Terminal to its full physical capacity would increase truck and train operations which could generate a potential health risk from additional diesel and coal dust emissions for residents and workers in the vicinity of the Coal Terminal." The SEA estimated risks based on "total project emissions at full operations" as this was considered to be the "most conservative analysis approach." A total of 771 offsite receptors were assessed; all receptors east of Highway 43 and all schools in the modeled area were modeled as 330 discrete individual receptors. The results showed that the proposed increased operations at the Wasco Coal Terminal of 1,500,000 tons per year due to the HECA project would be 8.5×10^{-6} at the point of maximum impact and therefore not be greater than the regulatory threshold. Staff has questions about this conclusion.

INFORMATION/CLARIFICATION REQUESTS

A253. The SEA estimated risks based on "total project emissions at full operations" (page 3-7) and Table 3.6-1 (page 3-10) lists the 2012 operations risk at 1.75×10^{-6} and the future maximum operations (with the HECA project) risk at 8.5×10^{-6} . This maximum risk is shown in Table 3.6-1 as being due to exposure via the "inhalation" pathway only. The SEA indicates on page 3-9 that Hotspots Analysis and Reporting Program (HARP) risk assessment parameters were "set to enable homegrown produce, dermal, soil ingestion, and mother's milk pathways, in addition to the inhalation pathway" to be assessed. Neither Table 3.6-1 nor the SEA narrative discusses the results of the assessment of these other exposure pathways. HARP output files are supposed to be present in Appendix C but they are not. Please provide the HARP input and output files so that staff can evaluate these other exposure pathways.

The report lists the maximum impact which was from inhalation pathway. All other pathway impacts can be viewed in the HARP output files, attached in Response Attachments A253.

Response Attachments

Response Attachment A225:

AERMOD Results and Files

Note: AERMOD model files are provided separately on CD

**Savage Coal Terminal
AAQA Emission Estimates**

Existing On-site Truck Exhaust Emissions - EMFAC2011

2012 Operations

Based on:

Vehicles/year: 4353
Max Vehicles/hr: 6
Miles/Truck: 0.18
Total miles travelled/year: 784
Max miles travelled/hr: 1.08

	PM10	PM2.5	NOX	CO	SOX
Em. Factor (grams/mile)*	1.16	1.06	22.80	6.52	0.00
Lbs/Mile	2.55E-03	2.34E-03	5.03E-02	1.44E-02	0.00E+00
lbs/hr	1.25E+00	1.14E+00	2.46E+01	7.04E+00	0.00E+00
Lbs/Year	2.00	1.83	39.38	11.26	0.00

*EMFAC2011: Kern County, 2012 Calendar Year, T7 Public, 15 mph, aggregate model years

Existing On-Site Truck Idle Emissions - EMFAC2011

2012 Operations

Based on:

Vehicles/year: 4353
Max Vehicles/hr: 6
Minutes/Truck: 15
Total Hours/year: 1,088
Max Idle Time/hr: 1.50

	PM10	PM2.5	NOX	CO	SOX
Em. Factor (grams/hour)*	0.73	0.67	83.12	41.83	0.07
Lbs/hour	1.61E-03	1.48E-03	1.83E-01	9.22E-02	1.46E-04
lbs/hr	1.10E+00	1.01E+00	1.25E+02	6.27E+01	9.90E-02
Lbs/Year	1.75	1.61	199.42	100.36	0.16

*EMFAC2011: SJV, 2012, HHDT, annual average

Existing On-site Locomotive Exhaust Emissions - EMFAC2011

2012 Operations

Based on:

HP: 750 (Half Throttle)
hr/yr: 41.043

	PM10	PM2.5	NOX	CO	SOX**
Em. Factor (grams/bhp-hr)*	0.26	0.24	11.80	8.00	0.0051
Lbs/bhp-hr	5.73E-04	5.27E-04	2.60E-02	1.76E-02	1.12E-05
Lbs/hr	4.30E-01	3.96E-01	1.95E+01	1.32E+01	8.43E-03
Lbs/Year	17.64	16.23	800.79	542.91	0.35

*40 CFR 1033.101 - EXHAUST EMISSION STANDARDS Table 2 - Tier 0

**CARB: Emission factors for SOx based on 15 ppmv S in fuel

Existing On-site Locomotive Exhaust Emissions - EMFAC2011

2012 Operations

Based on:

HP: 15 (Idling)
hr/yr: 369.387

	PM10	PM2.5	NOX	CO	SOX**
Em. Factor (grams/bhp-hr)*	0.26	0.24	11.80	8.00	0.0051
Lbs/bhp-hr	5.73E-04	5.27E-04	2.60E-02	1.76E-02	1.12E-05
Lbs/hr	8.60E-03	7.91E-03	3.90E-01	2.65E-01	1.69E-04
Lbs/Year	3.18	2.92	144.14	97.72	0.06

*40 CFR 1033.101 - EXHAUST EMISSION STANDARDS Table 2 - Tier 0

**CARB: Emission factors for SOx based on 15 ppmv S in fuel

Post-Project On-site Truck Travel Exhaust Emissions - EMFAC2011

1.5M TPY Processed

Based on:

Vehicles/year: 54675
Max Vehicles/hr: 9
Miles/Truck: 0.18
Total miles travelled/year: 9,842
Max miles travelled/hr: 1.62

	PM10	PM2.5	NOX	CO	SOX
Em. Factor (grams/mile)*	0.17	0.16	22.12	1.10	0.00
Lbs/Mile	3.73E-04	3.42E-04	4.88E-02	2.42E-03	0.00E+00
lbs/hr	2.74E-01	2.51E-01	3.58E+01	1.78E+00	0.00E+00
Lbs/Year	3.67	3.36	479.93	23.82	0.00

*EMFAC2011: Kern County, 2013 Calendar Year, T7 Public, 15 mph, aggregate model years

Post-Project On-Site Truck Idle Emissions - EMFAC2011

1.5M TPY Processed

Based on:

Vehicles/year: 54675
Max Vehicles/hr: 9
Minutes/Truck: 15
Total Hours/year: 13,669
Max Idle Time/hr: 2.25

	PM10	PM2.5	NOX	CO	SOX
Em. Factor (grams/hour)*	0.55	0.51	76.07	38.82	0.07
Lbs/hour	1.22E-03	1.12E-03	1.68E-01	8.56E-02	1.46E-04
lbs/hr	1.25E+00	1.15E+00	1.71E+02	8.73E+01	1.49E-01
Lbs/Year	16.69	15.34	2292.27	1169.82	1.99

*EMFAC2011: SJV, 2013, HHDT, annual average

Post-Project On-site Locomotive Travel Exhaust Emissions - EMFAC2011

1.5M TPY Processed

Based on:

HP: 750 (Half Throttle)
hr/yr: 397.8 (117 trains @ 34 hrs/train)

	PM10	PM2.5	NOX	CO	SOX
Em. Factor (grams/bhp-hr)*	0.13	0.12	8.10	2.40	0.0051
Lbs/bhp-hr	2.87E-04	2.64E-04	1.79E-02	5.29E-03	1.12E-05
Lbs/hr	2.15E-01	1.98E-01	1.34E+01	3.97E+00	8.43E-03
Lbs/Year	85.51	78.67	5327.77	1578.60	3.35

*40 CFR 1033.101 - EXHAUST EMISSION STANDARDS Table 2 - Tier 2

**CARB: Emission factors for SOx based on 15 ppmv S in fuel

Post-Project On-site Locomotive Travel Exhaust Emissions - EMFAC2011

1.5M TPY Processed

Based on:

HP: 15 (Idling)
hr/yr: 3580.2 (117 trains @ 34 hrs/train)

	PM10	PM2.5	NOX	CO	SOX
Em. Factor (grams/bhp-hr)*	0.13	0.12	8.10	2.40	0.0051
Lbs/bhp-hr	2.87E-04	2.64E-04	1.79E-02	5.29E-03	1.12E-05
Lbs/hr	4.30E-03	3.96E-03	2.68E-01	7.94E-02	1.69E-04
Lbs/Year	15.39	14.16	959.00	284.15	0.60

*40 CFR 1033.101 - EXHAUST EMISSION STANDARDS Table 2 - Tier 2

**CARB: Emission factors for SOx based on 15 ppmv S in fuel

Permit S-872-1												
Existing PM ₁₀ based Emissions from Operations generating Dust from Coal					Post-Project PM ₁₀ based Emissions from Operations generating Dust from Coal							
Name												
Applicability	Use this spreadsheet when the emissions are from a Coal PM ₁₀ sources and the PM ₁₀ rates are known (e.g. Coal Transfer Station). Entries required in yellow areas, output in grey areas.											
Author or updater		Matthew Cegielski		Last Update		May 14, 2013						
Facility:		Savage Coal Service Corporation										
ID#:												
Project #:												
Inputs	PM ₁₀ Rate lb/hr	PM ₁₀ Rate lb/yr	Formula									
Process Rate	3.40E-01	58.00	Input the process rate. Emissions are a result of the product of each corresponding PM ₁₀ Rate and weight fraction. Totals below.									
Substances	CAS#	Weight Fraction Coal PM ₁₀ Dust*	LB/HR	LB/YR								
Aluminum	7429905	6.46E-02	2.20E-02	3.75E+00								
Antimony	7440360	1.30E-04	4.42E-05	7.54E-03								
Barium	7440393	2.30E-04	7.82E-05	1.33E-02								
Cadmium	7440439	1.20E-04	4.08E-05	6.96E-03								
Chlorine	7782505	9.80E-04	3.33E-04	5.68E-02								
Chromium	7440473	4.00E-05	1.36E-05	2.32E-03								
Cobalt	7440484	6.67E-03	2.27E-03	3.87E-01								
Copper	7440508	6.00E-05	2.04E-05	3.48E-03								
Hexavalent Chromium**	18540299	2.00E-06	6.80E-07	1.16E-04								
Lead	7439921	3.40E-04	1.16E-04	1.97E-02								
Manganese	7439965	4.00E-05	1.36E-05	2.32E-03								
Phosphorus	7723140	1.17E-03	3.98E-04	6.79E-02								
Zinc	7440666	1.00E-04	3.40E-05	5.80E-03								
References:												
* Based on a EPA speciation of Coal Dust (1989) http://cfpub.epa.gov/si/speciate/ehpa_speciate_browse_details.cfm?ptype=P&number=2120410					* Based on a EPA speciation of Coal Dust (1989) http://cfpub.epa.gov/si/speciate/ehpa_speciate_browse_details.cfm?ptype=P&number=2120410							
Pollutants required for toxic reporting: HAPS w/o Risk Factor or Non - HAPS Current as of update date **5% of Chromium considered Hexavalent Chromium (District Policy)					Pollutants required for toxic reporting: HAPS w/o Risk Factor or Non - HAPS Current as of update date **5% of Chromium considered Hexavalent Chromium (District Policy)							
Existing Baseline Emissions (2012)					Post-Project Emissions (1.5 Million TPY)							
0.34 lbs PM10/hr (Emission factor from Permit S-872-1)					0.34 lbs PM10/hr (Emission factor from Permit S-872-1)							
119,405 tons Coal/yr (2012 Existing Operating Conditions)					1,500,000 tons Coal/yr (Post-Project Operating Conditions)							
170.58 hrs/yr (Based on Max receiving capacity of 700 tons/hr)					2142.86 hrs/yr (Based on Max receiving capacity of 700 tons/hr)							
58.00 lbs PM10/yr					728.57 lbs PM10/yr							
19.33 lbs PM10/yr (Per Baghouse)					242.86 lbs PM10/yr (Per Baghouse)							
5.65 lbs PM2.5/yr (Per Baghouse)					68.49 lbs PM2.5/yr (Per Baghouse)							

Permit S-872-2 thru -5															
Existing PM ₁₀ based Emissions from Operations generating Dust from Coal					Post-Project PM ₁₀ based Emissions from Operations generating Dust from Coal										
Name		Existing PM ₁₀ based Emissions from Operations generating Dust from Coal			Name		Post-Project PM ₁₀ based Emissions from Operations generating Dust from Coal								
Applicability		Use this spreadsheet when the emissions are from a Coal PM ₁₀ sources and the PM ₁₀ rates are known (e.g. Coal Transfer Station). Entries required in yellow areas, output in grey areas.			Applicability		Use this spreadsheet when the emissions are from a Coal PM ₁₀ sources and the PM ₁₀ rates are known (e.g. Coal Transfer Station). Entries required in yellow areas, output in grey areas.								
Author or updater		Matthew Cegielski		Last Update		May 14, 2013		Author or updater		Matthew Cegielski		Last Update		May 14, 2013	
Facility:		Savage Coal Service Corporation			Facility:		Savage Coal Service Corporation								
ID#:					ID#:										
Project #:					Project #:										
Inputs		PM ₁₀ Rate	PM ₁₀ Rate	Formula		Inputs		PM ₁₀ Rate	PM ₁₀ Rate	Formula					
Process Rate		8.00E-02	13.65	Input the process rate. Emissions are a result of the product of each corresponding PM ₁₀ Rate and weight fraction. Totals below.		Process Rate		8.00E-02	171.43	Input the process rate. Emissions are a result of the product of each corresponding PM ₁₀ Rate and weight fraction. Totals below.					
Substances		CAS#	Weight Fraction Coal PM ₁₀ Dust*	LB/HR	LB/YR	Substances		CAS#	Weight Fraction Coal PM ₁₀ Dust*	LB/HR	LB/YR				
Aluminum	7429905	6.46E-02	5.17E-03	8.82E-01		Aluminum	7429905	6.46E-02	5.17E-03	1.11E+01					
Antimony	7440360	1.30E-04	1.04E-05	1.77E-03		Antimony	7440360	1.30E-04	1.04E-05	2.23E-02					
Barium	7440393	2.30E-04	1.84E-05	3.14E-03		Barium	7440393	2.30E-04	1.84E-05	3.94E-02					
Cadmium	7440439	1.20E-04	9.60E-06	1.64E-03		Cadmium	7440439	1.20E-04	9.60E-06	2.06E-02					
Chlorine	7782505	9.80E-04	7.84E-05	1.34E-02		Chlorine	7782505	9.80E-04	7.84E-05	1.68E-01					
Chromium	7440473	4.00E-05	3.20E-06	5.46E-04		Chromium	7440473	4.00E-05	3.20E-06	6.86E-03					
Cobalt	7440484	6.67E-03	5.34E-04	9.10E-02		Cobalt	7440484	6.67E-03	5.34E-04	1.14E+00					
Copper	7440508	6.00E-05	4.80E-06	8.19E-04		Copper	7440508	6.00E-05	4.80E-06	1.03E-02					
Hexavalent Chromium**	18540299	2.00E-06	1.60E-07	2.73E-05		Hexavalent Chromium**	18540299	2.00E-06	1.60E-07	3.43E-04					
Lead	7439921	3.40E-04	2.72E-05	4.64E-03		Lead	7439921	3.40E-04	2.72E-05	5.83E-02					
Manganese	7439965	4.00E-05	3.20E-06	5.46E-04		Manganese	7439965	4.00E-05	3.20E-06	6.86E-03					
Phosphorus	7723140	1.17E-03	9.36E-05	1.60E-02		Phosphorus	7723140	1.17E-03	9.36E-05	2.01E-01					
Zinc	7440666	1.00E-04	8.00E-06	1.36E-03		Zinc	7440666	1.00E-04	8.00E-06	1.71E-02					
References:					References:										
* Based on a EPA speciation of Coal Dust (1989) http://cfpub.epa.gov/si/speciate/ehpa_speciate_browser_details.cfm?ptype=P&number=2120410					* Based on a EPA speciation of Coal Dust (1989) http://cfpub.epa.gov/si/speciate/ehpa_speciate_browser_details.cfm?ptype=P&number=2120410										
Pollutants required for toxic reporting: HAPS w/o Risk Factor or Non - HAPs Current as of update date					Pollutants required for toxic reporting: HAPS w/o Risk Factor or Non - HAPs Current as of update date										
**5% of Chromium considered Hexavalent Chromium (District Policy)					**5% of Chromium considered Hexavalent Chromium (District Policy)										
Existing Baseline Emissions (2012)					Post-Project Emissions (1.5 Million TPY)										
0.08 lbs PM10/hr (Emission factor from Permit S-872-2 thru -5)					0.08 lbs PM10/hr (Emission factor from Permit S-872-2 thru -5)										
119,405 tons Coal/yr (2012 Existing Operating Conditions)					1,500,000 tons Coal/yr (Post-Project Operating Conditions)										
170.58 hrs/yr (Based on Max receiving capacity of 700 tons/hr)					2142.86 hrs/yr (Based on Max receiving capacity of 700 tons/hr)										
13.65 lbs PM10/yr					171.43 lbs PM10/yr										
6.82 lbs PM10/yr (Per Baghouse)					85.71 lbs PM10/yr (Per Baghouse)										
1.99 lbs PM2.5/yr (Per Baghouse)					25.03 lbs PM2.5/yr (Per Baghouse)										

Permit S-872-6											
Existing PM ₁₀ based Emissions from Operations generating Dust from Coal					Post-Project PM ₁₀ based Emissions from Operations generating Dust from Coal						
Name		Existing PM ₁₀ based Emissions from Operations generating Dust from Coal			Name		Post-Project PM ₁₀ based Emissions from Operations generating Dust from Coal				
Applicability		Use this spreadsheet when the emissions are from a Coal PM ₁₀ sources and the PM ₁₀ rates are known (e.g. Coal Transfer Station). Entries required in yellow areas, output in grey areas.			Applicability		Use this spreadsheet when the emissions are from a Coal PM ₁₀ sources and the PM ₁₀ rates are known (e.g. Coal Transfer Station). Entries required in yellow areas, output in grey areas.				
Author or updater		Matthew Cegielski		Last Update		May 14, 2013					
Facility:		Savage Coal Service Corporation			Facility:		Savage Coal Service Corporation				
ID#:					ID#:						
Project #:					Project #:						
Inputs		PM ₁₀ Rate	PM ₁₀ Rate	Formula		Inputs		PM ₁₀ Rate	PM ₁₀ Rate	Formula	
Process Rate		1.50E-01	71.64	Input the process rate. Emissions are a result of the product of each corresponding PM ₁₀ Rate and weight fraction. Totals below.		Process Rate		1.50E-01	900.00	Input the process rate. Emissions are a result of the product of each corresponding PM ₁₀ Rate and weight fraction. Totals below.	
Substances		CAS#	Weight Fraction Coal PM ₁₀ Dust*	LB/HR	LB/YR	Substances		CAS#	Weight Fraction Coal PM ₁₀ Dust*	LB/HR	LB/YR
Aluminum	7429905	6.46E-02	9.69E-03	4.63E+00		Aluminum	7429905	6.46E-02	9.69E-03	5.82E+01	
Antimony	7440360	1.30E-04	1.95E-05	9.31E-03		Antimony	7440360	1.30E-04	1.95E-05	1.17E-01	
Barium	7440393	2.30E-04	3.45E-05	1.65E-02		Barium	7440393	2.30E-04	3.45E-05	2.07E-01	
Cadmium	7440439	1.20E-04	1.80E-05	8.60E-03		Cadmium	7440439	1.20E-04	1.80E-05	1.08E-01	
Chlorine	7782505	9.80E-04	1.47E-04	7.02E-02		Chlorine	7782505	9.80E-04	1.47E-04	8.82E-01	
Chromium	7440473	4.00E-05	6.00E-06	2.87E-03		Chromium	7440473	4.00E-05	6.00E-06	3.60E-02	
Cobalt	7440484	6.67E-03	1.00E-03	4.78E-01		Cobalt	7440484	6.67E-03	1.00E-03	6.00E+00	
Copper	7440508	6.00E-05	9.00E-06	4.30E-03		Copper	7440508	6.00E-05	9.00E-06	5.40E-02	
Hexavalent Chromium**	18540299	2.00E-06	3.00E-07	1.43E-04		Hexavalent Chromium**	18540299	2.00E-06	3.00E-07	1.80E-03	
Lead	7439921	3.40E-04	5.10E-05	2.44E-02		Lead	7439921	3.40E-04	5.10E-05	3.06E-01	
Manganese	7439965	4.00E-05	6.00E-06	2.87E-03		Manganese	7439965	4.00E-05	6.00E-06	3.60E-02	
Phosphorus	7723140	1.17E-03	1.76E-04	8.38E-02		Phosphorus	7723140	1.17E-03	1.76E-04	1.05E+00	
Zinc	7440666	1.00E-04	1.50E-05	7.16E-03		Zinc	7440666	1.00E-04	1.50E-05	9.00E-02	
References:					References:						
* Based on a EPA speciation of Coal Dust (1989) http://cfpub.epa.gov/si/speciate/ehpa_speciate_browser_details.cfm?ptype=P&number=2120410					* Based on a EPA speciation of Coal Dust (1989) http://cfpub.epa.gov/si/speciate/ehpa_speciate_browser_details.cfm?ptype=P&number=2120410						
Pollutants required for toxic reporting: HAPS w/o Risk Factor or Non - HAPs Current as of update date					Pollutants required for toxic reporting: HAPS w/o Risk Factor or Non - HAPs Current as of update date						
**5% of Chromium considered Hexavalent Chromium (District Policy)					**5% of Chromium considered Hexavalent Chromium (District Policy)						
Existing Baseline Emissions (2012)					Post-Project Emissions (1.5 Million TPY)						
0.15 lbs PM10/hr (Emission factor from Permit S-872-6)					0.15 lbs PM10/hr (Emission factor from Permit S-872-6)						
119,405 tons Coal/yr (2012 Existing Operating Conditions)					1,500,000 tons Coal/yr (Post-Project Operating Conditions)						
477.62 hrs/yr (Based on Max reclaiming capacity of 250 tons/hr)					6000.00 hrs/yr (Based on Max reclaiming capacity of 250 tons/hr)						
71.64 lbs PM10/yr					900.00 lbs PM10/yr						
71.64 lbs PM10/yr (Per Baghouse)					900.00 lbs PM10/yr (Per Baghouse)						
20.92 lbs PM2.5/yr (Per Baghouse)					262.80 lbs PM2.5/yr (Per Baghouse)						

AAQA for Savage (1)
All Values are in ug/m³

	Nox	NOx	CO	CO	SOx	SOx	SOx	SOx	PM10	PM10	PM2.5	PM2.5
	1 Hour	Annual	1 Hour	8 Hour	1 Hour	3 Hour	24 Hour	Annual	24 Hour	Annual	24 Hour	Annual
SLINE1	1.51E+00	6.75E-01	3.97E-01	1.42E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.28E-03	4.16E-04	3.01E-03	3.81E-04
SLINE2	3.76E+01	2.60E-01	1.94E-01	7.20E-02	3.33E-02	2.86E-03	1.10E-03	2.31E-04	5.00E-02	1.83E-02	4.60E-02	1.69E-02
STCK1	3.64E+00	1.85E+00	1.73E+00	9.82E-01	4.25E-03	2.60E-02	1.07E-02	2.16E-03	1.00E-03	9.87E-05	9.22E-03	9.09E-04
VOL1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.47E+00	2.39E-01	4.30E-01	6.99E-02
VOL2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.67E+00	2.46E-01	4.88E-01	7.19E-02
VOL3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.48E-02	1.01E-02	1.89E-02	2.95E-03
VOL4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.16E-02	3.32E-03	6.31E-03	9.69E-04
VOL5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.17E-02	3.29E-03	6.34E-03	9.62E-04
VOL6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.29E-01	3.39E-02	6.70E-02	9.90E-03
Background	1.15E+02	8.15E+00	3.09E+03	1.15E+03	1.92E+01	1.81E+01	1.05E+01	9.53E-01	1.09E+02	5.91E+01	8.30E+01	2.24E+01
Facility Totals	1.58E+02	1.09E+01	3.09E+03	1.15E+03	1.92E+01	1.81E+01	1.05E+01	9.56E-01	1.13E+02	5.97E+01	8.41E+01	2.26E+01
AAQS	188.68	100	23000	10000	196	1300	105	80	50	20	35	12
	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Fail	Fail	Fail	Fail

Project Significance Level (ug/m³)

NOx	NOx	CO	CO	SOx	SOx	SOx	SOx	PM10	PM10	PM2.5	PM2.5
1 Hour	Annual	1 Hour	8 Hour	1 Hour	3 Hour	24 Hour	Annual	24 Hour	Annual	24 Hour	Annual
8	1	2000	500	0	25	5	1	10.4	2.08	2.5	0.63
								Pass	Pass	Pass	Pass

AAQA Emission (g/sec)

<i>Device</i>	NOx		CO		SOx		SOx		PM10		PM2.5	
	1 Hour	Annual	1 Hour	8 Hour	1 Hour	3 Hour	24 Hour	Annual	24 Hour	Annual	24 Hour	Annual
SLINE1	6.34E-03	6.34E-03	1.81E-04	1.81E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.40E-05	2.40E-05	2.20E-05	2.20E-05
SLINE2	7.68E-02	7.68E-02	1.75E-03	1.75E-03	5.11E-05	5.11E-05	5.11E-05	5.11E-05	1.15E-03	1.15E-03	1.06E-03	1.06E-03
STCK1	3.01E-02	3.01E-02	1.54E-03	1.54E-03	2.63E-05	2.63E-05	2.63E-05	2.63E-05	2.14E-05	2.14E-05	1.97E-04	1.97E-04
VOL1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.21E-03	3.21E-03	9.37E-04	9.37E-04
VOL2	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.21E-03	3.21E-03	9.37E-04	9.37E-04
VOL3	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.21E-03	3.21E-03	9.37E-04	9.37E-04
VOL4	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.13E-03	1.13E-03	3.30E-04	3.30E-04
VOL5	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.13E-03	1.13E-03	3.30E-04	3.30E-04
VOL6	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.19E-02	1.19E-02	3.47E-03	3.47E-03

Response Attachment A240:
BNSF Train Handling/Storage Sidings



WASCO COAL TERMINAL - A 240
BNSF Train Handling / Storage Sidings

Response Attachment A250:

Wasco Coal Terminal List of Hazardous Materials and Material
Safety Data Sheets

FA0001861**SAVAGE SERVICES CORPORATION**

Chemical Name	Unit Name	Location	Max Daily Amount	Units
ACETYLENE	Fixed Containers at Site	NORTH END OF SEA TRAIN	310.0000	Cubic Feet
ALUMI KLEEN	Fixed Containers at Site	E OF SHOP IN SEA TRAIN	5.0000	Gallons
ARGON	Fixed Containers at Site	NORTH END OF SEA TRAIN	800.0000	Cubic Feet
CARBON DIOXIDE	Fixed Containers at Site	NORTH END OF SEA TRAIN	550.0000	Cubic Feet
COAL	Fixed Containers at Site		6000000.0000	Pounds
HYDRAULIC OIL	Fixed Containers at Site	NE CRNR SHOP/OFFICE BLDG	150.0000	Gallons
MOTOR OIL	Fixed Containers at Site	NE CRNR SHOP/OFFICE BLDG	450.0000	Gallons
NITROGEN	Fixed Containers at Site	NORTH END FO DEA TRIAN	282.0000	Cubic Feet
OXYGEN	Fixed Containers at Site	NORTH END OF SEA TRAIN	800.0000	Cubic Feet
PROPANE	Fixed Containers at Site	SW CRNR EXTERIOR OF OFFICE	750.0000	Gallons
SYNTHETIC OIL	Fixed Containers at Site	NE CRNR SHOP IN SIDE	55.0000	Gallons
USED OIL	Fixed Containers at Site	NE CRNR SHOP/OFFICE BLDG	100.0000	Gallons



MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material name (TRIIISOPROPYLSILYL)ACETYLENE, 98%
Catalog # 3337
Version # 03
Revision date 04-Feb-2010
CAS # 89343-06-6
Synonym(s) Ethynyltris(1-methylethyl)silane
Manufacturer information GFS Chemicals, Inc.
P.O. Box 245
Powell, OH 43065 US
www.gfschemicals.com
Fax 740-881-5989
Phone 740-881-5501
Toll Free 800-858-9682
Emergency Assistance Chemtrec 800-424-8300

2. Hazards Identification

Emergency overview WARNING
FLAMMABLE LIQUID AND VAPOR.
Harmful in contact with eyes. Irritating to skin. Irritating to respiratory system. May be harmful if absorbed through skin. The toxicological properties of this material have not been fully investigated.

OSHA regulatory status This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

Potential health effects

Routes of exposure Inhalation. Skin contact. Eye contact.

Eyes Contact may irritate or burn eyes. Eye contact may result in corneal injury. Do not get this material in contact with eyes.

Skin Irritating to skin.

Inhalation Irritating to respiratory system. Avoid breathing dust/fume/gas/mist/vapors/spray.

Ingestion Do not ingest.

Target organs Eyes. Respiratory system.

Chronic effects Conjunctiva.

Signs and symptoms Corneal damage. Conjunctivitis.

Potential environmental effects Ecological injuries are not known or expected under normal use.

3. Composition / Information on Ingredients

Components	CAS #	Percent
(TRIIISOPROPYLSILYL)ACETYLENE	89343-06-6	90 - 100

4. First Aid Measures

First aid procedures

Eye contact Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.

Skin contact Take off immediately all contaminated clothing. Wash off immediately with plenty of water. If skin irritation persists, call a physician.

Inhalation Move to fresh air. For breathing difficulties, oxygen may be necessary. Call a physician if symptoms develop or persist.

Ingestion

Have victim rinse mouth thoroughly with water. Do not induce vomiting without advice from poison control center. If ingestion of a large amount does occur, call a poison control center immediately.

Notes to physician

Symptoms may be delayed.

General advice

Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire Fighting Measures

Flammable properties

Flammable by OSHA criteria. Heat may cause the containers to explode. Runoff to sewer may cause fire or explosion hazard.

Extinguishing media**Suitable extinguishing media**

Water. Water fog. Foam. Dry chemical powder. Carbon dioxide (CO₂).

Unsuitable extinguishing media

Do not use a solid water stream as it may scatter and spread fire.

Protection of firefighters**Specific hazards arising from the chemical**

Fire may produce irritating, corrosive and/or toxic gases.

Protective equipment and precautions for firefighters

In case of fire and/or explosion do not breathe fumes. Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also consider initial evacuation for 800 meters (1/2 mile) in all directions. ALWAYS stay away from tanks engulfed in flame. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. Move containers from fire area if you can do so without risk. In the event of fire, cool tanks with water spray. Use water spray to cool unopened containers. Cool containers exposed to flames with water until well after the fire is out. For massive fire in cargo area, use unmanned hose holder or monitor nozzles, if possible. If not, withdraw and let fire burn out.

Specific methods

In the event of fire and/or explosion do not breathe fumes. In the event of fire, cool tanks with water spray. Use water spray to cool unopened containers.

6. Accidental Release Measures

Personal precautions

Keep unnecessary personnel away. Keep upwind. Keep out of low areas. Keep people away from and upwind of spill/leak. Ventilate closed spaces before entering them. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

Methods for containment

ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Prevent entry into waterways, sewers, basements or confined areas.

Methods for cleaning up

Large Spills: Dike far ahead of spill for later disposal. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Following product recovery, flush area with water.

Never return spills in original containers for re-use.

7. Handling and Storage

Handling

Do not handle or store near an open flame, heat or other sources of ignition. Do not smoke. All equipment used when handling the product must be grounded. Do not get this material in contact with eyes. Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid contact with skin. Use only in area provided with appropriate exhaust ventilation. Wash thoroughly after handling.

Storage

The pressure in sealed containers can increase under the influence of heat. Keep away from heat, sparks and open flame. Keep away from heat and sources of ignition. This material can accumulate static charge which may cause spark and become an ignition source. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Refrigeration recommended. Store in a well-ventilated place. Keep container tightly closed. Use care in handling/storage.

8. Exposure Controls / Personal Protection

Engineering controls	Ensure adequate ventilation, especially in confined areas.
Personal protective equipment	
Respiratory protection	A NIOSH- approved air purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Avoid breathing dust/fume/gas/mist/vapors/spray.
Hand protection	Wear protective gloves.
Eye / face protection	Do not get this material in contact with eyes. Wear chemical goggles.
Skin protection	Avoid contact with the skin. Wear appropriate chemical resistant clothing. Wear protective gloves.
General hygiene considerations	When using do not smoke. Do not get this material in contact with eyes. Avoid contact with skin. Handle in accordance with good industrial hygiene and safety practice.
General	Avoid contact with skin. Avoid contact with eyes. Ensure that eyewash stations and safety showers are close to the workstation location.

9. Physical & Chemical Properties

Appearance	Clear.
Color	Colorless.
Odor	Not available.
Odor threshold	Not available.
Physical state	Liquid.
Form	Liquid.
pH	Not available.
Melting point	Not available.
Freezing point	Not available.
Boiling point	122 °F (50 °C) @ 6 mm Hg
Flash point	132.8 °F (56 °C)
Evaporation rate	Not available.
Flammability	Not available.
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Specific gravity	0.813
Relative density	0.813 g/cm ³
Solubility (water)	Immiscible.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Molecular formula	[CH(CH ₃) ₂] ₃ SiCCH

10. Chemical Stability & Reactivity Information

Chemical stability	Stable at normal conditions. Risk of ignition.
Conditions to avoid	Heat, flames and sparks.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	May include oxides of carbon. May include oxides of silicon.
Possibility of hazardous reactions	Hazardous polymerization does not occur.

11. Toxicological Information

Toxicological information	The toxicological properties have not been fully investigated.
Local effects	Irritating to respiratory system. Irritating to skin. Contact may irritate or burn eyes.
Chronic effects	Hazardous by OSHA criteria.
Carcinogenicity	This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

12. Ecological Information

Ecotoxicity	This product has no known eco-toxicological effects.
Persistence and degradability	Not available.

13. Disposal Considerations

Waste codes	D001: Waste Flammable material with a flash point <140 F
Disposal instructions	Dispose of this material and its container at hazardous or special waste collection point. Incinerate the material under controlled conditions in an approved incinerator. Do not incinerate sealed containers. If discarded, this product is considered a RCRA ignitable waste, D001. Dispose in accordance with all applicable regulations.

14. Transport Information

DOT

Basic shipping requirements:

Proper shipping name	Flammable liquids, n.o.s.
Hazard class	3
UN number	UN1993
Packing group	III

Additional information:

Special provisions	B1, B52, IB3, T4, TP1, TP29
Packaging exceptions	150
Packaging non bulk	203
Packaging bulk	242
ERG number	128



15. Regulatory Information

US federal regulations	This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200. CERCLA/SARA Hazardous Substances - Not applicable. Not listed on TSCA
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CERCLA (Superfund) reportable quantity

None

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories	Immediate Hazard - Yes Delayed Hazard - Yes Fire Hazard - Yes Pressure Hazard - No Reactivity Hazard - No
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Section 302 extremely hazardous substance	No
Section 311 hazardous chemical	Yes

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	No
Canada	Domestic Substances List (DSL)	No
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Inventory of New and Existing Chemicals (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	No
New Zealand	New Zealand Inventory	No
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	No

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

State regulations

This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

16. Other Information

Further information

HMIS® is a registered trade and service mark of the NPCA.

HMIS® ratings

Health: 2*
Flammability: 2
Physical hazard: 0

NFPA ratings

Health: 2
Flammability: 2
Instability: 0

Disclaimer

The information in the sheet was written based on the best knowledge and experience currently available. The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Issue date

04-Feb-2010

This data sheet contains changes from the previous version in section(s):

Hazards Identification: Emergency overview
Exposure Controls / Personal Protection: General
Regulatory Information: United States

Safety Information MSDS

TOP

FSC: 6830 MSDS Date: 07/20/1995 MSDS Num: BZFJG

Submitter: F BT LIIN: 00F048313 Tech Review: 06/18/1996 Status CD: C

Product ID: 0-99% ARGON MFN: 01

Article: N Kit Part: N

Cage: Responsible Party 0BZR5 Name: SPECTRA GASES INC

Address: 277 COIT ST Box: N/K City: IRVINGTON State: NJ Zip: 07111-5000 Country: US

Info Phone Number: 201-372-2060/202-484-7616

Emergency Phone Number: 201-372-2060/201-483-0257

Preparer's Name: N/P

Proprietary Ind: N Review Ind: Y

Published: Y Special Project CD: N

Co. when other than Responsible Party Co. Preparer

TOP

Cage: 0BZR5 Assigned Ind: N

Name: SPECTRA GASES INC

Address: 277 COIT ST Box:

City: IRVINGTON State: NJ Zip: 07111-5000

Summary Contractor

TOP

Cage: Name:

Address: 0BZR5
277 COIT ST
City: IRVINGTON
Country: US

SPECTRA GASES INC

State: NJ
Zip: 07111-5000

Phone: 201-372-2060/202-484-7616

Ingredients

[TOP](#)

Cas: 7440-37-1 M CF2300000 M

Name: ARGON

Code: RTECS #: Code:

% Text: 0-99

Environmental Wt:

OSHA PEL:

N/K

Other REC Limits: N/K

Code: M OSHA STEL: Code:

ACGIH TLV: SIMPLE ASPHYXIANT

Code: M ACGIH N/P STEL: Code:

EPA Rpt Qty:

DOT Rpt Qty:

Ozone Depleting Chemical:

N

Hazards Data

Health

[TOP](#)

LD50 LC50 Mixture

N/P

Route Of Entry Inds - Inhalation: YES

Skin: NO

Ingestion: NO

Carcinogenicity Inds - NTP: NO

IARC: NO

OSHA: NO

Health Hazards Acute And Chronic

HYDROGEN CHLORIDE-SKIN: MAY CAUSE MILD IRRITATION TO SEVERE ACID BURNS & POSSIBLE TISSUE DESTRUCTION. EYES: CAN CAUSE SEVERE BURNS & POSSIBLE BLINDNESS. INHALATION: CAN CAUSE SEVERE IRRITATION OF THE LUNGS & NASAL PASSAGES. INFLAMMATION & ABNORMAL FLUID BUILD UP IN THE LUNGS WHICH MAY BE FATAL.

Explanation Of Carcinogenicity

NONE

Signs And Symptoms Of Overexposure

HYDROGEN CHLORIDE: IRRITATION, BURNS, PAIN, REDNESS, SWELLING, BLINDNESS, COUGHING, DIFFICULTY BREATHING, INFLAMMATION.

Medical Cond Aggravated By Exposure

PULMONARY DISEASES.

First Aid

SKIN: TREAT SYMPTOMATICALLY. FLUSH W/LARGE AMOUNTS OF WATER FOR 15 MINS. IF BURNS COVER A LARGE PART OF BODY PUT VICTIM UNDER A SHOWER & REMOVE CLOTHING. WASH W/SOAP THEN RINSE THOROUGHLY. EYES: WASH W/LARGE AMOUNTS OF WATER FOR 15 MINS. USE ANESTHETIC DROPS AFTER WASHING/FLUSHING. INHALATION: REMOVE TO FRESH AIR. GIVE CPR/OXYGEN IF NEEDED. KEEP WARM & QUIET. OBTAIN MEDICAL ATTENTION IN ALL CASES.

Spill Release Procedures

DON'T TRY TO REPAIR LEAKY SYSTEMS UNTIL RESIDUAL MIXTURE IS PURGED, REDUCE PRESSURE BEFORE REPAIRING. EVACUATE AREA. AVOID FLUSHING CONTAMINATED WATER INTO SEWER SYSTEM. FLUSH AREA, NEUTRALIZE W/SODA ASH/LIMESTONE, DILUTE W/LARGE AMOUNTS OF WATER.

Neutralizing Agent

SODA ASH/LIMESTONE

Waste Disposal Methods

SMALL QUANTITIES OF MIXTURE MAY BE DISPOSED OF SLOWLY BY VENTING THROUGH A SOLID ACTIVATED CHARCOAL/SODA LIME SCRUBBER. DON'T DISPOSE OF UNUSED PRODUCT. PLEASE RETURN UNUSED PORTIONS TO: SPECTRA GASES INC., 80 INDUSTRIAL DR., ALPHA, NJ 08865.

Handling And Storage Precautions

STORE MIXTURE NO LONGER THAN 1 YEAR. STORE CYLINDERS SEPARATELY FROM COMBUSTIBLES/EXPLOSIVE MATERIALS. STORE EMPTY CYLINDERS SEPARATELY FROM FULL.

Other Precautions

STORE CYLINDERS UPRIGHT IN A COOL, DRY WELL AREA FROM HEAT, TEMPS >125F. CYLINDER PLUGS & CAPS MUST BE PLACED WHEN NOT IN USE. DON'T SLIDE, DRAG, ROLL/KNOCK CYLINDERS AGAINST SHARP OBJECTS. USE A HAND CYLINDER HAND TRUCK WHEN TRANSPORTING.

Explosion Hazard Information

Fire and

[TOP](#)

Flash Point Method:

N/P

Flash Point:

Flash Point Text: NONFLAMMABLE

Autoignition Temp:

Autoignition Temp Text: N/A

Lower Limits: N/K

Upper Limits: N/K

Extinguishing Media

USE EXTINGUISHING MEDIA FOR SURROUNDING FIRE/WATERSPRAY.

Fire Fighting Procedures

USE SCBA & CHEMICAL RESISTANT SUITS. EVACUATE AREA & FIGHT FIRE FROM A DISTANCE. REMOVE CYLINDERS FROM FIRE AREA & COOL W/A WATER SPRAY.

Unusual Fire/Explosion Hazard

THE HYDROCHLORIC ACID FORMED WHEN HYDROGEN CHLORIDE & WATER MIX MAY REACT W/METALS TO LIBERATE FLAMMABLE HYDROGEN GAS.

Measures Control [TOP](#)

Respiratory Protection

OSHA RECOMMENDS AN INWARD FACE VELOCITY FOR THESE ENCLOSURES BE 200 FT/MIN OF AIR.

Ventilation

FANS, FUME HOODS, EXHAUST VENTS TO REDUCE EXPOSURE LEVEL TO BELOW THE TWA LIMITS.

Protective Gloves

NEOPRENE/BUTYL/POLY VINYL/LEATHER

Eye Protection

CHEMICAL RESISTANT SAFETY GLASSES

Other Protective Equipment

FACE SHIELDS, SAFETY SHOES (STEEL TOE/EQUIVALENT), PROTECTIVE CLOTHING, EYEWASH STATIONS SAFETY SHOWERS.

Work Hygienic Practices

N/P

Supplemental Safety and Health

N/P

HCC:

NRC/State LIC No:

Net Prop WT For Ammo:

Boiling Point:

B.P. Text: -302.62F

Melt/Freeze Pt:

M.P/F.P Text: N/K

Decomp Temp:

Decomp Text: N/K

Vapor Pres: N/K

Vapor Density: N/K

Volatile Org Content %:

Spec Gravity: N/K

VOC Pounds/Gallon:

PH: N/K

VOC Grams/Liter:

Viscosity: N/P

Evaporation Rate & Reference: N/K

Solubility in Water: N/K

Appearance and Odor: COLORLESS GAS W/A SHARP IRRITATING ODOR

Percent Volatiles by Volume: N/K

Corrosion Rate: N/K

Stability Indicator:

YES

Stability Condition To Avoid: HEAT, TEMPS >125F, MOISTURE.

Materials To Avoid: FLUORINE/CALCIUM CARBIDE/CESIUM/CESIUM
CARBIDE/LITHIUM SILICIDE/MAGNESIUM
BORATE/MERCURIC SULFATE/RUBIDIUM
CARBIDE.(SUPP

Hazardous Decomposition Products: THERMAL: HYDROGEN, CHLORINE

Hazardous Polymerization Indicator: NO

Conditions To Avoid Polymerization N/K

Toxicological Information

[TOP](#)

Toxicological Information:

N/P

Ecological Information

[TOP](#)

Ecological:

N/P

Information

MSDS Transport

[TOP](#)

Transport Information:

N/P

Regulatory Information

[TOP](#)

Sara Title III Information:

N/P

Federal Regulatory Information: N/P

State Regulatory Information: N/P

Other Information

[TOP](#)

Other Information:

N/P

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I. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

1.1. Identification of the preparation

Product Name: "Carbon Dioxide"
Chemical Name: Carbon Dioxide
CAS No.: 124-38-9
Chemical Formula: CO₂
EINECS Number: 204-696-9

1.2. Use of the preparation

The intended or recommended use of this preparation is as a FIRE EXTINGUISHING AGENT.

1.3. Company identification

Manufacturer/Supplier: ANSUL INCORPORATED
Address: One Stanton Street, Marinette, WI 54143-2542
Prepared by: Safety and Health Department
Phone: 715-735-7411
Internet/Home Page: <http://www.ansul.com>
Date of Issue: September, 2006

1.4. Emergency telephone

CHEMTREC 800-424-9300 or 703-527-3887

2. COMPOSITION/INFORMATION ON INGREDIENTS

2.1. Ingredient Name: Carbon Dioxide.
Chemical Formula: CO₂.
CAS No.: 124-38-9.
EINECS Number: 204-696-9.
Concentration, Wt %: 100%.
Hazard Identification: See Heading 3.

3. HAZARDS IDENTIFICATION

FOR HUMANS:

EU Classification: Nonflammable Gas.
R Phrases: None.
S Phrases: 9 Keep container in a well ventilated place.

Limit Values for Exposure:

OSHA PEL: 5,000 ppm, (9,000 mg/m³).
ACGIH TLV-TWA: 5,000 ppm, (9,000 mg/m³).
ACGIH TLV-STEL: 30,000 ppm, (54,000 mg/m³).
IDLH (Immediately Dangerous for Life and Health): 50,000 ppm.

This substance has not been listed as carcinogenic by National Toxicology Program, IARC, or OSHA.

SIGNS AND SYMPTOMS:

Acute Exposure:

Eye Contact: Contact with carbon dioxide snow (dry ice) can produce chilling sensations and discomfort, also frostbite.
Skin Contact: Evaporation of liquid from the skin can produce chilling sensations. Frostbite can occur. Avoid carbon dioxide snow (dry ice).
Inhalation: Vapor is heavier than air and can cause suffocation by reducing oxygen available for breathing. Breathing very high concentrations of vapor can cause lightheadedness, giddiness, shortness of breath, muscular tremors, and weakness, acrocyanosis. Also unconsciousness or even death
Ingestion: Ingestion is not likely to occur since this substance is a gas at room temperature.

Chronic Overexposure: No data available.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: Respiratory problems.

FOR ENVIRONMENT:

Carbon dioxide is a global warming gas.

4. FIRST AID MEASURES

Eye Contact:	Immediately flush eyes with water for a minimum of 15 minutes. If redness, itching or a burning sensation develops, get medical attention. Treat for frostbite if necessary.
Skin Contact:	If redness, itching or a burning sensation develops, get medical attention. Treat for frostbite if necessary.
Inhalation:	Remove victim to fresh air. If cough or other respiratory symptoms occur, consult medical personnel. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Consult medical personnel.
Ingestion:	None needed.

5. FIRE-FIGHTING MEASURES

This preparation is an extinguishing media.

There are NO extinguishing media which must not be used for safety reasons.

Though gas cylinders are equipped with pressure and temperature relief devices, they should be removed from high temperature areas or fires, if safe to do so, to avoid risk of rupture.

NO special protective equipment is needed for fire-fighters.

6. ACCIDENTAL RELEASE MEASURES

For personal protection: Prevent skin and eye contact, see Heading 8.

Clean up: This substance will vaporize into the atmosphere, see Heading 13.

This substance is a global warming gas.

7. HANDLING AND STORAGE

7.1. Handling

Care should be taken in handling all chemical substances and preparations.

Secure to prevent falling. Do not move without safety cap in place to prevent damage to valve.

See incompatibility information in Heading 10.

7.2. Storage

Store containers in a clean, dry, well-ventilated area, away from heat above 120 °F. Store as a compressed gas in DOT approved vessels. Keep safety cap in place while in storage.

See incompatibility information in Heading 10.

This substance is a global warming gas.

7.3. Specific use

The intended or recommended use of this preparation is as a FIRE EXTINGUISHING AGENT.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Exposure limit values

Limit Values for Exposure:

OSHA PEL:	5,000 ppm, (9,000 mg/m ³).
ACGIH TLV-TWA:	5,000 ppm, (9,000 mg/m ³).
ACGIH TLV-STEL:	30,000 ppm, (54,000 mg/m ³).

IDLH (Immediately Dangerous for Life and Health): 50,000 ppm.

8.2. Exposure controls

8.2.1. Occupational exposure controls

8.2.1.1. Respiratory protection

Not expected to be needed if controls are adequate. If TLV is exceeded or if exposure is prolonged, a self-contained breathing apparatus is recommended. Maintain good ventilation during use of this substance in order to minimize worker exposure.

8.2.1.2. Hand protection

Protective gloves for contact with dry ice.

8.2.1.3. Eye protection

Use safety glasses with side shields or safety goggles particularly when handling the liquid.

8.2.1.4. Skin protection

Protective clothing as needed for contact with dry ice.

8.2.2. Environmental exposure controls

Since this is a gas at normal conditions, release should be only as needed to extinguish fires.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. General information

Appearance:	Colorless gas.
Odor:	None.

9.2. Important health, safety, and environmental information

pH:	Not determined.
Boiling point/boiling range:	Sublimes.
Flash point:	None.
Flammability (solid/gas):	Not flammable.
Explosive properties:	Not explosive.
Oxidizing properties:	Not an oxidizer.
Vapor Pressure:	830 psi @ 20 °C.
Relative Density:	Not applicable.
Solubility:	
– Water solubility:	88 ml carbon dioxide per 100 ml @ 20 °C.
– Fat solubility:	Not soluble.
Partition coefficient, n-octanol/water:	Not determined.
Viscosity:	Not determined.
Vapor density (Air = 1):	1.5.
Evaporation rate:	Not applicable.

9.3. Other information

Auto-ignition temperature:	Does not ignite.
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10. STABILITY AND REACTIVITY

10.1. Conditions to avoid

Extremely high temperatures, as in a fire may cause a cylinder to fail.

There are no known conditions such as temperature, pressure, light, shock, etc., which may cause a dangerous reaction.

10.2. Materials to avoid

(Al + Na₂O₂), (Mg + Na₂O), Cs₂O, Li, K, Mg(C₂H₅)₂, KC₂H, Na, NaK, and Ti.

10.3. Hazardous decomposition products

Normally stable.

Hazardous polymerization will not occur.

There are no hazardous combustion or decomposition products.

11. TOXICOLOGICAL INFORMATION

Inhalation LC_{LO} (human) = 100,000 ppm/min.

12. ECOLOGICAL INFORMATION

12.1. Ecotoxicity

This material is a normal atmospheric gas.

12.2. Mobility

This material is a normal atmospheric gas.

12.3. Persistence and degradability

This material is a normal atmospheric gas.

12.4. Bioaccumulative potential

This material is a normal atmospheric gas.

12.5. Other adverse effects

Ozone depletion potential: None.
Photochemical ozone creation potential: None
Global warming potential: This is a global warming gas.

13. DISPOSAL CONSIDERATIONS

This preparation, if spilled it will vaporize to the atmosphere.
This is a global warming gas.

14. TRANSPORT INFORMATION

Hazard Class or Division: Carbon Dioxide, Class 2.2, UN1013
Label: Nonflammable gas.
Emergency response guide page number: 120; EMS (Intl): 2-09.
For additional transport information, contact Ansul Incorporated.
This is a global warming gas.

15. REGULATORY INFORMATION

EU Classification: Nonflammable Gas.
R Phrases: None.
S Phrases: 9 Keep container in a well ventilated place.
Exposure Limit Values:
OSHA PEL: 5,000 ppm, (9,000 mg/m³).
ACGIH TLV-TWA: 5,000 ppm, (9,000 mg/m³).
ACGIH TLV-STEL: 30,000 ppm, (54,000 mg/m³).
IDLH (Immediately Dangerous for Life and Health): 50,000 ppm.
EINECS Status: All components are included in EINECS inventories or are exempt from listing.
EPA TSCA Status: All components are included in TSCA inventories or are exempt from listing.
Canadian DSL (Domestic Substances List): All components are included in the DSL or are exempt from listing.
Environmental restrictions: None are known.
Restrictions on Marketing and Use: None are known.
Refer to any other national measures that may be relevant.

16. OTHER INFORMATION

(HMIS) HAZARDOUS MATERIAL IDENTIFICATION SYSTEM RATINGS:

HEALTH:	<u>1</u>	4. Severe Hazard
FLAMMABILITY:	<u>0</u>	3. Serious Hazard
REACTIVITY:	<u>0</u>	2. Moderate Hazard
		1. Slight Hazard
		0. Minimal Hazard

(WHMIS) CANADIAN WORKPLACE HAZARDOUS MATERIAL IDENTIFICATION SYSTEM RATINGS:

This product is rated: **A – Compressed Gas.**

Format is from directive 2001/58/EC.

EINECS data is from <http://ecb.jrc.it/existing-chemicals/>

Data used to compile the data sheet is from Ansul Material Safety Data Sheet, February, 2002.

Toxicological information added from the EINECS ESIS (Existing Substances Information System). A rating under WHMIS has been added, following the Canadian guidelines.

Updated to new format.

The EU Classification has been changed in accordance with Directive 1999/45/EC and information in the EINECS ESIS files. A rating under WHMIS has been added, following the Canadian guidelines.

17. DISCLAIMER

THE ABOVE INFORMATION IS BELIEVED TO BE CORRECT, BUT DOES NOT PURPORT TO BE ALL INCLUSIVE AND SHALL BE USED ONLY AS A GUIDE. ANSUL SHALL NOT BE HELD LIABLE FOR ANY DAMAGE RESULTING FROM HANDLING OR FROM CONTACT WITH THE ABOVE PRODUCT.

MSDS available at <http://www.ansul.com>

ANSUL is a trademark of Ansul Incorporated or its affiliates.



Safety Data Sheet

Material Name: Anthracite Coal

SDS ID: 00244507

Section 1 - PRODUCT AND COMPANY IDENTIFICATION

Material Name: Anthracite Coal

Supplier Information

CMC Cometals
2050 Center Avenue, Suite 250
Fort Lee, NJ 07024
Contact Phone #: (201) 302-0888

Emergency # CHEMTREC®: (800) 424-9300

Chemical Family

polynuclear, aromatic, hydrocarbons

Synonyms

COAL, ANTHRACITE; COAL; HARD COAL; ANTHRAFILT; PHILTERKOL 1; ANTHRACITE COAL; STONE COAL

Section 2 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Color: black

Physical Form: powder

Odor: odorless

Health Hazards: cancer hazard (in humans)

Physical Hazards: Dust/air mixtures may ignite or explode.

POTENTIAL HEALTH EFFECTS

Inhalation

Short Term: irritation, cough, chest pain

Long Term: irritation, cough, weight loss, chest pain, difficulty breathing, wheezing, bluish skin color, lung damage, cancer

Skin

Short Term: irritation

Long Term: no information is available

Eye

Short Term: irritation

Long Term: eye damage

Ingestion

Short Term: irritation

Long Term: no information is available

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

CAS	Component / EC#	Percent	Symbol(s)	Risk Phrase(s)
8029-10-5	ANTHRACITE	100	---	---

Safety Data Sheet

Material Name: Anthracite Coal

SDS ID: 00244507

14808-60-7	QUARTZ 238-878-4	>1	T	R:49
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Contaminants

ANTHRACITE COAL CONTAINS VARIED AMOUNTS OF ASH, VOLATILE MATERIALS, AND QUARTZ.

Section 4 - FIRST AID MEASURES

Inhalation

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

Skin

Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

Eyes

Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

Ingestion

If swallowed, get medical attention.

Section 5 - FIRE FIGHTING MEASURES

See Section 9 for Flammability Properties

NFPA Ratings: Health: 1 Fire: 1 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Flammable Properties

Slight fire hazard. Dust/air mixtures may ignite or explode.

Extinguishing Media

regular dry chemical, carbon dioxide, water, regular foam
Large fires: Use regular foam or flood with fine water spray.

Fire Fighting Measures

Move container from fire area if it can be done without risk. Do not scatter spilled material with high-pressure water streams. Dike for later disposal. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

Thermal Decomposition Products

Combustion: oxides of carbon

Section 6 - ACCIDENTAL RELEASE MEASURES

Water Release

Subject to California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65). Keep out of water supplies and sewers.

Occupational Spill / Release

Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Use non-sparking tools and equipment. Collect spilled material in appropriate container for disposal. Keep out of water supplies and sewers. Keep unnecessary people away, isolate hazard area and deny entry.

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Section 7 - HANDLING AND STORAGE

Handling Procedures

Minimize dust generation and accumulation. Routine housekeeping should be instituted to ensure that dusts do not accumulate on surfaces. Dissipate static electricity during transfer by earthing (grounding and bonding) containers and equipment.

Storage Procedures

Store and handle in accordance with all current regulations and standards. Store in a cool, dry place. Store in a well-ventilated area. See original container for storage recommendations. Keep separated from incompatible substances.

Incompatible materials include oxidizing materials, metals, metal salts, halogens, combustible materials, reducing agents, bases, and acids.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Component Exposure Limits

ANTHRACITE (8029-10-5)

ACGIH: 0.4 mg/m³ TWA (dust, respirable fraction)

QUARTZ (14808-60-7)

ACGIH: 0.025 mg/m³ TWA (respirable fraction)

NIOSH: 0.05 mg/m³ TWA (respirable dust)

OSHA (US): (30)/(%SiO₂ + 2) mg/m³ TWA, total dust; (250)/(%SiO₂ + 5) mppcf TWA, respirable fraction; (10)/(%SiO₂ + 2) mg/m³ TWA, respirable fraction

OSHA (Vacated): 0.1 mg/m³ TWA (respirable dust)

Mexico: 0.1 mg/m³ TWA LMPE-PPT (respirable fraction)

Ventilation

Ventilation equipment should be explosion-resistant if explosive concentrations of material are present. Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

Eyes/Face

Wear splash resistant safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Protective Clothing

Wear appropriate chemical resistant clothing.

Glove Recommendations

Wear appropriate chemical resistant gloves.

Respiratory Protection

Under conditions of frequent use or heavy exposure, respiratory protection may be needed.

Respiratory protection is ranked in order from minimum to maximum.

Consider warning properties before use.

Any air-purifying half-mask respirator equipped with organic vapor cartridge(s) in combination with an N95, R95, or P95 filter. The following filters may also be used: N99, R99, P99, N100, R100 or P100.

Any air-purifying full-facepiece respirator (gas mask) with a chin-style, front-mounted or back-mounted organic vapor canister having an N100, R100, or P100 filter.

Any powered, air-purifying respirator with a tight-fitting facepiece, organic vapor cartridge(s) and high-efficiency particulate filter(s).

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Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode.

For Unknown Concentrations or Immediately Dangerous to Life or Health -

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid	Appearance:	Not available
Color:	black	Physical Form:	powder
Odor:	odorless	Odor Threshold:	Not available
Melting Point:	Not available	Boiling Point:	Not applicable
Vapor Pressure:	Not applicable	Vapor Density (air = 1):	Not applicable
Density:	50 - 60 lbs/ft3	Specific Gravity (water = 1):	1.3 - 1.8
Water Solubility:	soluble	Coeff. Water/Oil Dist:	Not available

Section 10 - STABILITY AND REACTIVITY
--

Chemical Stability

Stable at normal temperatures and pressure.

Conditions to Avoid

Avoid heat, flames, sparks and other sources of ignition. Avoid contact with incompatible materials.

Materials to Avoid

oxidizing materials, metals, metal salts, halogens, combustible materials, reducing agents, bases, acids

ANTHRACITE:

OXIDIZERS (STRONG): Fire and explosion hazard.

QUARTZ:

ALKALIES (STRONG): May be attacked.

CHLORINE TRIFLUORIDE: Possible explosion.

HYDROCHLORIC ACID: Exothermic reaction.

HYDROFLUORIC ACID: May be attacked.

MANGANESE TRIFLUORIDE: Violent reaction.

METALS: May produce violent explosion.

OXIDIZERS (STRONG): Fire and explosion hazard.

OXYGEN TRIFLUORIDE: Possible explosive reaction.

OZONE: Possible explosive reaction in presence of organic materials.

VINYL ACETATE: Vigorous reaction.

XENON HEXAFLUORIDE: Possible detonation.

COAL DUST:

OXIDIZERS (STRONG): Fire and explosion hazard.

Decomposition Products

Thermal Decomposition Products

Combustion: oxides of carbon

Safety Data Sheet

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Thermal decomposition products: oxides of carbon.

Possibility of Hazardous Reactions

Will not polymerize.

* * *Section 11 - TOXICOLOGICAL INFORMATION* * *

Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and the following selected endpoints are published:

QUARTZ (14808-60-7)

Oral LD50 Rat 500 mg/kg

RTECS Acute Toxicity (selected)

The components of this material have been reviewed and RTECS publishes no data as of the date on this document.

RTECS Irritation

The components of this material have been reviewed and RTECS publishes no data as of the date on this document.

Carcinogenicity

Adenocarcinomas and squamous-cell carcinomas of the lung in rats were produced after inhalation or repeated intratracheal instillation of various forms of crystalline silica. Malignant lymphomas developed in rats after intrapleural and intraperitoneal injections of quartz suspensions and intrapleural injection of cristobalite and tridymite. Epidemiologic studies indicate lung cancer occurs more frequently among silicotics than in the general population.

Component Carcinogenicity

ANTHRACITE (8029-10-5)

ACGIH: A4 - Not Classifiable as a Human Carcinogen

QUARTZ (14808-60-7)

ACGIH: A2 - Suspected Human Carcinogen

IARC: Monograph 100C [2012]; Monograph 68 [1997] (Group 1 (carcinogenic to humans))

NTP: Known Human Carcinogen (respirable size)

DFG: Category 1 (causes cancer in man, alveola fraction)

RTECS Tumorigenic

The components of this material have been reviewed, and RTECS publishes the following endpoints:

QUARTZ (14808-60-7)

83 mg/kg Intrapleural Hamster TDLo; 4000 mg/kg Implant Mouse TDLo; 4554 mg/kg Implant Rat TD; 900 mg/kg Implant Rat TDLo; 50 mg/m³ Inhalation Rat TCLo (6 hour); 90 mg/kg Intraperitoneal Rat TD (4 week); 450 mg/kg Intraperitoneal Rat TD (4 week); 45 mg/kg Intraperitoneal Rat TDLo; 200 mg/kg Intrapleural Rat TD; 100 mg/kg Intrapleural Rat TD; 100 mg/kg Intrapleural Rat TD; 100 mg/kg Intrapleural Rat TD; 90 mg/kg Intrapleural Rat TDLo; 111 mg/kg Intratracheal Rat TDLo; 100 mg/kg Intratracheal Rat TDLo (19 week); 90 mg/kg Intravenous Rat TDLo

RTECS Mutagenic

The components of this material have been reviewed, and RTECS publishes the following endpoints:

QUARTZ (14808-60-7)

160 ug/cm² hamster; 120 mg/L/24 hour human; 120 mg/L human; 40 ug/cm² human; 500 mg/plate/4 hour rat; 3 mg/kg rat

Medical Conditions Aggravated by Exposure

respiratory disorders

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Additional Data

Smoking may enhance the toxic effects.

Inhalation Acute Exposure

ANTHRACITE: May cause irritation and a cough. QUARTZ: Exposure to high concentrations may cause physical discomfort of the upper respiratory tract.

Inhalation Chronic Exposure

ANTHRACITE: Inhalation of anthracite coal dust for several years may cause coal workers pneumoconiosis. Coal workers pneumoconiosis exists in 2 forms: Simple, which results from carbon particles alone, and complicated, from a mixture of particles resulting in progressive massive fibrosis. Simple pneumoconiosis is slow in onset with nonspecific symptoms including coughing, wheezing, dyspnea, and black sputum. Simple pneumoconiosis may occur concomitantly with chronic bronchitis and emphysema and is associated with minimal respiratory impairments. Diagnosis is made on the presence of small opacities on chest X-ray. As the simple pneumoconiosis progresses to an advanced stage, some reduction in ventilatory function may occur. Coal worker's pneumoconiosis appears to stop when exposure ceases, but progressive massive fibrosis may still develop. Complicated pneumoconiosis is diagnosed by large opacities on chest X-ray. Complicated pneumoconiosis is associated with reduction in ventilatory capacity, low diffusing capacity, abnormalities of gas exchange, low arterial oxygen tension, severe emphysema, pulmonary hypertension, right heart failure, and premature death. Tuberculosis and bacterial pneumonia are serious complications. Caplan's syndrome, depressed interferon activity, and cytotoxic effects have been reported. Freshness and increased surface area of dust particles increases cytotoxicity. QUARTZ: Inhalation of very high concentrations of finely divided crystalline silica dust, exposure ranging from a few weeks to 4-5 years, may cause a rapidly developing silicosis, characterized by pulmonary insufficiency with severe dyspnea, violent coughing, tachypnea, weight loss, and cyanosis leading to the development of cor pulmonale and death within a relatively short period of time. A slowly developing silicosis may result from exposure for 6 months-30 years to relatively low levels of the dust. The first symptom is usually a slowly increasing, non-disabling, exertional dyspnea due to pulmonary fibrosis and the emphysema associated with it. Continued exposure may increase the rate of progression of the disease. Also, the fibrogenic action may continue when exposure ceases. As the fibrosis advances, other symptoms may include shortness of breath, productive cough, wheezing, chest tightness or pain, marked weakness, decreased capacity for work, and repeated non-specific chest illnesses. Cyanosis, clubbing of digits, orthopnea, or serious weight loss are not usually evident until the disease is advanced. Pulmonary infections, which may be indicated by hemoptysis, and cardiac decompensation may exacerbate the symptoms. Three major complications, which are the most frequent causes of death, are pulmonary tuberculosis, respiratory insufficiency which is due to the massive emphysematous and fibrotic changes and is sometimes accompanied by chronic cor pulmonale, and acute bronchopulmonary infection. A number of studies have shown that persons diagnosed as having silicosis have an increased risk for dying from lung cancer. This increase has been seen among miners, quarry workers, foundry workers, ceramic workers, granite workers, and stone cutters. In some of these studies, the risk of lung cancer increased with the duration of employment. Various forms and preparations of crystalline silica produced adenocarcinomas and squamous cell carcinomas of the lungs in rats.

Skin Contact Acute Exposure

ANTHRACITE: May cause slight irritation. QUARTZ: May cause irritation of intact skin due to mechanical abrasion. If the skin is abraded, a heavy growth of scar tissue may be induced.

Skin Contact Chronic Exposure

ANTHRACITE: No data available. QUARTZ: No data available.

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Eye Contact Acute Exposure

ANTHRACITE: May cause slight irritation. QUARTZ: May cause irritation due to mechanical action. Particles of silica in the range of 2-3 micrometers introduced into the corneal stroma of rabbit eyes caused very little reaction. These same particles introduced into the anterior chamber resulted in an inflammatory reaction in 3-5 weeks with the formation of fibrotic nodules in the iridocorneal angle. Finely divided silica injected into the vitreous of rabbit eyes has caused necrosis of the retina and atrophy of the choroid.

Eye Contact Chronic Exposure

ANTHRACITE: No data available. QUARTZ: An abnormally high silicon content in the cornea, and a gradual decrease in visual acuity due to corneal opacities in the pupillary area, have been reported in a group of foundry workers.

Ingestion Acute Exposure

ANTHRACITE: No data available. QUARTZ: Effects of ingestion are due to mechanical action as crystalline silicas are biologically inert.

Ingestion Chronic Exposure

ANTHRACITE: No data available. QUARTZ: No data available.

Section 12 - ECOLOGICAL INFORMATION

Component Analysis - Aquatic Toxicity

No LOLI ecotoxicity data are available for this product's components.

Section 13 - DISPOSAL CONSIDERATIONS

Disposal Methods

Dispose in accordance with all applicable regulations.

Component Waste Numbers

The U.S. EPA has not published waste numbers for this product's components.

Section 14 - TRANSPORT INFORMATION

US DOT Information

No Classification assigned.

TDG Information

No Classification assigned.

ADR Information

No Classification assigned.

RID Information

No Classification assigned.

IATA Information

No Classification assigned.

ICAO Information

No Classification assigned.

IMDG Information

No Classification assigned.

Safety Data Sheet

Material Name: Anthracite Coal

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Section 15 - REGULATORY INFORMATION

U.S. Federal Regulations

None of this products components are listed under SARA Sections 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), or require an OSHA process safety plan.

SARA Section 311/312 (40 CFR 370 Subparts B and C)

Acute Health: No Chronic Health: Yes Fire: No Pressure: No Reactive: No

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA
QUARTZ	14808-60-7	No	Yes	Yes	Yes	Yes

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the state of California to cause cancer.

Component Analysis - Prop 65

QUARTZ (14808-60-7)

Carc: carcinogen, initial date 10/1/88 (airborne particles of respirable size)

Canada WHMIS

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

QUARTZ (14808-60-7)

1 %

Germany Water Classification

QUARTZ (14808-60-7)

Annex 1: ID Number 849, not considered hazardous to water

Annex 3: ID Number 849, not considered hazardous to water

EU Marking and Labelling

Symbols

T Toxic

Risk Phrases

R49 May cause cancer by inhalation.

Safety Phrases

None required.

Component Analysis - Inventory

Component	CAS	US	CA	EU	AU	PH	JP	KR	CN	NZ
ANTHRACITE	8029-10-5	No	No	No	No	Yes	No	No	No	No
QUARTZ	14808-60-7	Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	Yes

Safety Data Sheet

Material Name: Anthracite Coal

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Section 16 - OTHER INFORMATION

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; RID - European Rail Transport; RTECS - Registry of Toxic Effects of Chemical Substances®; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States

Full text of R phrases in Section 3

R49 May cause cancer by inhalation.

Other Information

Reasonable care has been taken in the preparation of this information, but the manufacturer makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The manufacturer makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from its use. **Disclaimer:** Supplier gives no warranty whatsoever, including the warranties of merchantability or of fitness for a particular purpose. Any product purchased is sold on the assumption the purchaser shall determine the quality and suitability of the product. Supplier expressly disclaims any and all liability for incidental, consequential or any other damages arising out of the use or misuse of this product. No information provided shall be deemed to be a recommendation to use any product in conflict with any existing patent rights.

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End of Sheet 00244507

SAFETY MEETING MSDS

Chemical name:	
Name:	ALUMINUM BRIGHTNER
Where:	Sea Can \ Wash Bay
Why:	Clean aluminum trailers
Special Protective Equipment:	Face shield Neoprene gloves Protective clothing , Plastic apron, long pants and sleeves
Health Hazards:	
Eyes	Contact with eyes may cause permanent damage
Skin	Contact with skin may cause permanent damage
Inhalation	Fumes may irritate respiratory tract, mist should be absolutely avoided
Ingestion:	Swallowing may cause permanent damage but is to corsive to force down
First Aid:	
Skin:	Wash off with water, remove contamenated clothing and wash before reuse
Eye:	Flush eyes with large amounts of water, lifting upper and lower eyelids
Inhalation	Remove to fresh air
Ingestion:	Obtain immediate medical attention
Spill and Special Precautions:	Spills: Neutralize with soda ash and mop or scrape up Store in a cool, dry, and well ventilated area
Fire Hazard	Extremely corrosive material, especially when heated. May liberate flammable hydrogen gas on contact with reactive metals
Phsical Hazards (reactivity Data):	STABLE Materials to avoid: Alkaline materials, reactive metals

MSDS N2-G

Revision Date: March 29, 2009

Material Safety Data Sheet

Gaseous Nitrogen

[Section 1 : PRODUCT AND COMPANY IDENTIFICATION](#)

[Section 2 : COMPOSITION/ INGREDIENT INFORMATION](#)

[Section 3 : HAZARD IDENTIFICATION](#)

[Section 4 : FIRST AID MEASURES](#)

[Section 5 : FIRE FIGHTING MEASURES](#)

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[Section 15 : REGULATORY INFORMATION](#)

[Section 16 : OTHER INFORMATION](#)



Section 1 : PRODUCT AND COMPANY IDENTIFICATION

Product name: Nitrogen (Gaseous),

Supplier/ Manufacturer: Universal Industrial Gases, Inc.
2200 Northwood Avenue, Suite
3
Easton, PA 18045-2239 USA
(610) 559-7967.

Emergency phone: (610) 559-7967.

Section 2 : COMPOSITION/ INGREDIENT INFORMATION

C.A.S.	CONCENTRATION %	Ingredient Name	OSHA PEL	ACGIH TLV	OSHA STEL
7727-37-9	> 99	NITROGEN	NONE	SIMPLE ASPHYXIANT	NONE

Section 3 : HAZARD IDENTIFICATION

Emergency Overview: Nitrogen gas is colorless, odorless and non-flammable.

It is non-toxic. The primary health hazard is asphyxiation by displacement of oxygen.

Route of entry: Inhalation, skin and eye contact.

Effects of acute exposure

Eye contact: Vapor may cause a stinging sensation.

Skin contact: No adverse effects from gas.

Inhalation: May cause dizziness.

Asphyxiant.

Can cause vomiting.

May result in unconsciousness.

May cause excitation, excess salivation, rapid breathing.

May cause headaches and drowsiness.

May cause stinging of the nose and throat.

Ingestion: Not a likely route of exposure.

Effects of chronic exposure: None known. Chronic exposure to abnormal concentrations unlikely

Reproductive effects: Oxygen deficiency during pregnancy has produced developmental abnormalities in humans and experimental animals.

Section 4 : FIRST AID MEASURES

Skin contact: None required.

Eye contact: None required.

Inhalation: **RESCUERS SHOULD NOT ATTEMPT TO RETRIEVE VICTIMS OF EXPOSURE TO THIS PRODUCT WITHOUT ADEQUATE PERSONAL PROTECTIVE EQUIPMENT. At a minimum, Self-Contained Breathing Apparatus should be worn.**

Remove victim(s) to fresh air, as quickly as possible. If not breathing qualified personnel should administer artificial respiration. Get medical attention.
If breathing is difficult, administer oxygen.

Ingestion: No first aid should be needed.

Not considered a potential route of exposure.

Section 5 : FIRE FIGHTING MEASURES

Flammability: Not flammable.

Conditions of flammability: Will not burn.

Extinguishing media: Use appropriate extinguishing media for surrounding fire.

Special procedures: Self-contained breathing apparatus required.

Firefighters should wear the usual protective gear.

Cool fire exposed containers with water spray.

Personnel should be evacuated, if necessary, to upwind area.

Remove containers from fire area if without risk.

Auto-ignition temperature: Not applicable.

Flash point (°C), method: Not applicable.

Lower flammability limit (% vol): Not applicable.

Upper flammability limit (% vol): Not applicable.

Explosion Data

Sensitivity to mechanical impact: Avoid impact against container.

Explosive power: Closed containers may rupture or explode due to pressure build-up when exposed to extreme heat.

Cylinders are equipped with temperature and pressure relief devices but may still rupture under fire conditions.

Section 6 : ACCIDENTAL RELEASE MEASURES

Leak/Spill: Evacuate all non-essential personnel.

Stop leak without risk.

Wear gloves and goggles

Use a self-contained breathing apparatus.

Ventilate area. Monitor the surrounding area for Oxygen level. Oxygen must be at least 19.5% before personnel may be allowed into the area without self-contained breathing apparatus.

If the area must be entered by emergency personnel, self-contained breathing apparatus, Kevlar gloves, and appropriate foot and leg protection must be worn.

Section 7 : HANDLING AND STORAGE

Handling procedures and equipment: Protect system components against physical damage.

Use adequate ventilation.

Avoid inhalation.

Never work on a pressurized system.

If there is a leak, close the upstream valve, blow down the system by venting to a safe place, then repair the leak.

Storage requirements: Use storage containers, piping, valves and fittings designed for storage and distribution of Gaseous Nitrogen. Protect cylinders against physical damage. Store in cool, dry, well-ventilated, fireproof area, away from flammable materials and corrosive atmospheres. Store away from heat and ignition sources and out of direct sunlight. Do not store near elevators, corridors or loading docks. Do not allow area where cylinders are stored to exceed 52°C (125°F).

Move cylinders with a suitable hand-truck. Do not drag, slide or roll cylinders. Do not drop cylinders or permit them to strike each other. Secure cylinders firmly. Leave the valve protection cap in place (where provided) until cylinder is placed into service and after it is taken out of service.

Use designated CGA fittings and other support equipment. Do not use adapters. Do not heat cylinder by any means to increase the discharge rate of the product from the cylinder. Use check valve or trap in discharge line to prevent hazardous backflow into the cylinder. Do not use oils or grease on gas-handling fittings or equipment.

After use, close main cylinder valve. Replace valve protection cap (where provided). Mark empty cylinders "EMPTY".

Section 8 : EXPOSURE CONTROLS / PERSONAL PROTECTION

Precautionary Measures

Gloves/Type:



Work gloves

Respiratory/Type: NIOSH/MSHA approved respirator.

Eye/Type: As per local regulations.

Footwear/Type: Safety boots per local regulations.

Clothing/Type: Wear adequate protective clothes.

Other/Type: Eye wash facility should be in close proximity.

Emergency shower should be in close proximity.

Ventilation requirements: Mechanical ventilation is satisfactory. Ensure oxygen concentration remains above 19.5% and Carbon Dioxide concentration does not exceed 5000 ppm,

Local exhaust at points of emission preferred.

Exposure limit of material Simple asphyxiant.

Section 9 : PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Gas

Appearance & odor: Colorless, odorless gas.

Odor threshold (PPM): Odorless.

Vapor pressure : Gas@ 70°F (21°C)

Vapor sp. gravity (air=1): 0.967 @ 70°F (21°C)

Volatiles (% by volume) 100%

Boiling point : -195.8°C (760 mmHg)

-320.4°F

Freezing point : -209.9°C

-345.8°F

Solubility in water (%): Slight.

Section 10 : STABILITY AND REACTIVITY

Chemical stability: Product is stable.

Conditions of reactivity: Heat

Hazardous polymerization: Will not occur.

Incompatible substances: Lithium.

Titanium.

Neodymium.

Hazardous decomposition products: None.

Section 11 : TOXICOLOGICAL INFORMATION

LD50 of product, species & route: Not available.

LC50 of product, species & route: Not available.

Section 13 : DISPOSAL CONSIDERATIONS

Waste disposal: Gas will dissipate in air. Cylinders should be returned in the original shipping container, properly labeled, with any valve outlet plugs or caps secured and valve protection cap in place.

Section 14 : TRANSPORT INFORMATION

DOT/ TDG classification:

For cylinder shipments:
Nitrogen, compressed
UN 1066
DOT Class 2.2 (Non-Flammable Gas)



North American
Emergency Response [121](#) (Gas)
Guidebook Number:

Section 15 : REGULATORY INFORMATION

WHMIS classification:



DSL status:Appears on DSL.

Section 16 : OTHER INFORMATION

Definitions and other useful data:

CAS #: The Chemical Abstract Service Number which uniquely identifies each constituent.

ACGIH - American Conference of Governmental Industrial Hygienists, a professional association which establishes exposure limits.

TLV - Threshold Limit Value - an airborne concentration of a substance which represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect.

OSHA - U.S. Occupational Safety and Health Administration.

PEL - Permissible Exposure Limit - The same value as a TLV, except it is enforceable by OSHA.

IDLH - Immediately Dangerous to Life and Health - A concentration from which one can escape within 30-minutes without suffering permanent injury.

NATIONAL FIRE PROTECTION ASSOCIATION:

Health Hazard Rating Scale (Blue):

0 (material that on exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials);

1 (materials that on exposure under fire conditions could cause irritation or minor residual injury);

2 (materials that on intense or continued exposure under fire conditions could cause temporary incapacitation or possible residual injury);

3 (materials that can on short exposure could cause serious temporary or residual injury);

4 (materials that under very short exposure could cause death or major residual injury).

Flammability Hazard Rating Scale (Red):

0 (minimal hazard);

1 (materials that require substantial pre-heating before burning);

2 (combustible liquid or solids; liquids with a flash point of 38-93°C [100-200°F]);

3 (Class IB and IC flammable liquids with flash points below 38°C [100°F]);

4 (Class IA flammable liquids with flash points below 23°C [73°F] and boiling points below 38°C [100°F]).

Reactivity Hazard Rating Scale (Yellow):

0 (normally stable);

1 (material that can become unstable at elevated temperatures or which can react slightly with water);

2 (materials that are unstable but do not detonate or which can react violently with water);

3 (materials that can detonate when initiated or which can react explosively with water);

4 (materials that can detonate at normal temperatures or pressures).

TOXICOLOGICAL INFORMATION:

Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. Definitions of some terms:

LD50 -Lethal Dose (solids & liquids) which kills 50% of the exposed animals;

LC50 - Lethal Concentration (gases) which kills 50% of the exposed animals;

ppm concentration expressed in parts of material per million parts of air or water;

mg/m³ concentration expressed in weight of substance per volume of air;

mg/kg quantity of material, by weight.

REGULATORY INFORMATION:

EPA is the U.S. Environmental Protection Agency.

WHMIS is the Canadian Workplace Hazardous Materials Information System.

DOT and **TC** are the U.S. Department of Transportation and the Transport Canada, respectively, which assign DOT and **TDG** (Transportation of Dangerous Goods) identification

numbers, hazard classifications, and proper shipping name and shipping label information. This material is hazardous as defined by 49 CFR 172.101 of the US Department of Transportation and Dangerous Goods as defined by Transport Canada Transportation of Dangerous Goods Regulations.

USE OF THIS INFORMATION:

Universal Industrial Gases, Inc. offers this information to customers, employees, contractors, and the general public to promote the safe use of this product through awareness of product hazards and safety information. Customers and others who use or transport or sell this product to others should: 1) Disseminate this information internally to all workplace areas, employees, agents and contractors likely to encounter this product; 2) Provide supplemental hazards awareness, safety information, operation and maintenance procedures to the workplace areas and employees, agents and contractors likely to encounter this product; 3) Furnish this information to all their customers who purchase this product; and 4) Ask each purchaser or user of the product to notify its employees and customers of the product hazards and safety information.



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1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Oxygen

Chemical formula : O₂

Synonyms : Oxygen, Oxygen gas, Gaseous Oxygen, GOX

Product Use Description : General Industrial

Company : Sims Welding Supply
2445 South Street
Long Beach, CA 90805

Telephone : 562-728-5500

Emergency telephone number : (800) 535-5053

2. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS Number	Concentration (Volume)
Oxygen	7782-44-7	100 %

Concentration is nominal. For the exact product composition, please refer to Air Products technical specifications.

3. HAZARDS IDENTIFICATION

Emergency Overview

High pressure, oxidizing gas.
Vigorously accelerates combustion.
Keep oil, grease, and combustibles away.
May react violently with combustible materials.

Potential Health Effects

Inhalation : Breathing 75% or more oxygen at atmospheric pressure for more than a few hours may cause nasal stuffiness, cough, sore throat, chest pain and breathing difficulty. Breathing pure oxygen under pressure may cause lung damage and also central nervous system effects.

Eye contact : No adverse effect.

Skin contact : No adverse effect.

Ingestion : Ingestion is not considered a potential route of exposure.

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Exposure Guidelines

Primary Routes of Entry : Inhalation
Target Organs : None known.

Aggravated Medical Condition

If oxygen is administered to persons with chronic obstructive pulmonary disease, raising the oxygen concentration in the blood depresses their breathing and raises their retained carbon dioxide to a dangerous level.

4. FIRST AID MEASURES

General advice : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

Eye contact : Seek medical advice.

Skin contact : Wash with water and soap as a precaution.

Ingestion : Ingestion is not considered a potential route of exposure.

Inhalation : Consult a physician after significant exposure. Move to fresh air. If breathing has stopped or is labored, give assisted respirations. Supplemental oxygen may be indicated. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : All known extinguishing media can be used.

Specific hazards : Most cylinders are designed to vent contents when exposed to elevated temperatures.

Further information : Some materials that are noncombustible in air will burn in the presence of an oxygen enriched atmosphere (greater than 23%). Fire resistant clothing may burn and offer no protection in oxygen rich atmospheres.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Clothing exposed to high concentrations may retain oxygen 30 minutes or longer and become a potential fire hazard. Stay away from ignition sources. Evacuate personnel to safe areas. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Ventilate the area.

Environmental precautions : Do not discharge into any place where its accumulation could be dangerous. Prevent further leakage or spillage if safe to do so.

Methods for cleaning up : Ventilate the area.

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Additional advice : If possible, stop flow of product. Increase ventilation to the release area and monitor concentrations. If leak is from cylinder or cylinder valve, call the Air Products emergency telephone number. If the leak is in the user's system, close the cylinder valve, safely vent the pressure, and purge with an inert gas before attempting repairs.

7. HANDLING AND STORAGE

Handling

All gauges, valves, regulators, piping and equipment to be used in oxygen service must be cleaned for oxygen service. Oxygen is not to be used as a substitute for compressed air. Never use an oxygen jet for cleaning purposes of any sort, especially clothing, as it increases the likelihood of an engulfing fire. Only experienced and properly instructed persons should handle compressed gases. Protect cylinders from physical damage; do not drag, roll, slide or drop. Do not allow storage area temperature to exceed 50°C (122°F). Before using the product, determine its identity by reading the label. Know and understand the properties and hazards of the product before use. When doubt exists as to the correct handling procedure for a particular gas, contact the supplier. Do not remove or deface labels provided by the supplier for the identification of the cylinder contents. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use. Use an adjustable strap wrench to remove over-tight or rusted caps. Before connecting the container, check the complete gas system for suitability, particularly for pressure rating and materials. Before connecting the container for use, ensure that back feed from the system into the container is prevented. Ensure the complete gas system is compatible for pressure rating and materials of construction. Ensure the complete gas system has been checked for leaks before use. Employ suitable pressure regulating devices on all containers when the gas is being emitted to systems with lower pressure rating than that of the container. Never insert an object (e.g. wrench, screwdriver, pry bar, etc.) into valve cap openings. Doing so may damage valve, causing a leak to occur. If user experiences any difficulty operating cylinder valve discontinue use and contact supplier. Close container valve after each use and when empty, even if still connected to equipment. Never attempt to repair or modify container valves or safety relief devices. Damaged valves should be reported immediately to the supplier. Do not use containers as rollers or supports or for any other purpose than to contain the gas as supplied. Never strike an arc on a compressed gas cylinder or make a cylinder a part of an electrical circuit. Do not smoke while handling product or cylinders. Never re-compress a gas or a gas mixture without first consulting the supplier. Never attempt to transfer gases from one cylinder/container to another. Always use backflow protective device in piping. When returning cylinder install valve outlet cap or plug leak tight. Never permit oil, grease, or other readily combustible substances to come into contact with valves or containers containing oxygen or other oxidants. Do not use rapidly opening valves (e.g. ball valves). Open valve slowly to avoid pressure shock. Never pressurize the entire system at once. Use only with equipment cleaned for oxygen service and rated for cylinder pressure. Never use direct flame or electrical heating devices to raise the pressure of a container. Containers should not be subjected to temperatures above 50°C (122°F). Prolonged periods of cold temperature below -30°C (-20°F) should be avoided.

Storage

Containers should be stored in a purpose build compound which should be well ventilated, preferably in the open air. Full containers should be stored so that oldest stock is used first. Stored containers should be periodically checked for general condition and leakage. Observe all regulations and local requirements regarding storage of containers. Protect containers stored in the open against rusting and extremes of weather. Containers should not be stored in conditions likely to encourage corrosion. Containers should be stored in the vertical position and properly secured to prevent toppling. The container valves should be tightly closed and where appropriate valve outlets should be capped or plugged. Container valve guards or caps should be in place. Keep containers tightly closed in a cool, well-ventilated place. Store containers in location free from fire risk and away from sources of heat and ignition. Full and empty cylinders should be segregated. Do not allow storage temperature to exceed 50°C (122°F). Display "No Smoking or Open Flames" signs in the storage

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areas. Return empty containers in a timely manner. Flammable storage areas should be separated from oxygen and other oxidizers by a minimum distance of 20 ft. (6.1 m.) or by a barrier of non-combustible material at least 5 ft. (1.5 m.) high, having a fire resistance rating of at least 1/2 hour.

Technical measures/Precautions

Containers should be segregated in the storage area according to the various categories (e.g. flammable, toxic, etc.) and in accordance with local regulations.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Personal protective equipment

- | | |
|---|--|
| Respiratory protection | : Users of breathing apparatus must be trained. |
| Hand protection | : Sturdy work gloves are recommended for handling cylinders.
The breakthrough time of the selected glove(s) must be greater than the intended use period. |
| Eye protection | : Safety glasses recommended when handling cylinders. |
| Skin and body protection | : Safety shoes are recommended when handling cylinders. |
| Special instructions for protection and hygiene | : Ensure adequate ventilation, especially in confined areas. Gloves must be clean and free of oil and grease. |

9. PHYSICAL AND CHEMICAL PROPERTIES

- | | |
|------------------------|---|
| Form | : Compressed gas. |
| Color | : Colorless gas |
| Odor | : No odor warning properties. |
| Molecular Weight | : 32 g/mol |
| Relative vapor density | : 1.1 (air = 1) |
| Relative density | : 1.1 (water = 1) |
| Density | : 0.081 lb/ft ³ (0.0013 g/cm ³) at 70 °F (21 °C)
Note: (as vapor) |
| Specific Volume | : 12.08 ft ³ /lb (0.7540 m ³ /kg) at 70 °F (21 °C) |
| Boiling point/range | : -297 °F (-183 °C) |
| Critical temperature | : -180 °F (-118 °C) |
| Melting point/range | : -362 °F (-219 °C) |

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Water solubility : 0.039 g/l

10. STABILITY AND REACTIVITY

Stability : Stable under normal conditions.

Materials to avoid : Flammable materials.
Organic materials.
Avoid oil, grease and all other combustible materials.

11. TOXICOLOGICAL INFORMATION

Acute Health Hazard

Ingestion : No data is available on the product itself.

Inhalation : No data is available on the product itself.

Skin. : No data is available on the product itself.

Chronic Health Hazard

Premature infants exposed to high oxygen concentrations may suffer delayed retinal damage that can progress to retinal detachment and blindness. Retinal damage may also occur in adults exposed to 100% oxygen for extended periods (24 to 48 hr). At two or more atmospheres central nervous system (CNS) toxicity occurs. Symptoms include nausea, vomiting, dizziness or vertigo, muscle twitching, vision changes and loss of consciousness and generalized seizures. At three atmospheres, CNS toxicity occurs in less than two hours and at six atmospheres in only a few minutes.

12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Aquatic toxicity : No data is available on the product itself.

Toxicity to other organisms : No data available.

Persistence and degradability

Mobility : No data available.

Bioaccumulation : No data is available on the product itself.

Further information

No ecological damage caused by this product.

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products : Return unused product in original cylinder to supplier. Contact supplier if guidance is required.

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Contaminated packaging : Return cylinder to supplier.

14. TRANSPORT INFORMATION

CFR

Proper shipping name : Oxygen, compressed
Class : 2.2 (5.1)
UN/ID No. : UN1072

IATA

Proper shipping name : Oxygen, compressed
Class : 2.2 (5.1)
UN/ID No. : UN1072

IMDG

Proper shipping name : OXYGEN, COMPRESSED
Class : 2.2 (5.1)
UN/ID No. : UN1072

CTC

Proper shipping name : OXYGEN, COMPRESSED
Class : 2.2 (5.1)
UN/ID No. : UN1072

Further Information

Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency.

15. REGULATORY INFORMATION

OSHA Hazard Communication Standard (29 CFR 1910.1200) Hazard Class(es)
Oxidizer. Compressed Gas.

Country	Regulatory list	Notification
USA	TSCA	Included on Inventory.
EU	EINECS	Included on Inventory.
Canada	DSL	Included on Inventory.
Australia	AICS	Included on Inventory.
South Korea	ECL	Included on Inventory.
China	SEPA	Included on Inventory.
Philippines	PICCS	Included on Inventory.
Japan	ENCS	Included on Inventory.

EPA SARA Title III Section 312 (40 CFR 370) Hazard Classification:
Fire Hazard. Sudden Release of Pressure Hazard.

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

This product does not contain any chemicals known to State of California to cause cancer, birth defects or any other harm.

16. OTHER INFORMATION

NFPA Rating

Health	:	0
Fire	:	0
Instability	:	0
Special	:	OX

HMIS Rating

Health	:	0
Flammability	:	0
Physical hazard	:	3

Prepared by : Sims Welding Supply Co., Inc.



Material Safety Data Sheet

1. Product and Company Identification

Product name : **Propane**
Chemical formula : C₃H₈
Synonyms : Dimethylmethane
Company : SpecAir Specialty Gases
22 Albiston Way
Auburn, Maine 04210 USA
Telephone : 207-777-6218
Emergency : 800-535-5053

2. Composition/Information on Ingredients

Components	CAS Number	% Volume
Propane	74-98-6	99+%

3. Hazards Identification

Emergency Overview

Flammable liquid and gas under pressure.
Can form explosive mixtures with air.
May cause frostbite.

Potential Health Effects

Inhalation : Material acts as a simply asphyxiant by displacing air necessary for life. Symptoms include rapid respiration, muscular incoordination, fatigue, dizziness, nausea, vomiting, unconsciousness, and death.
Eye contact : None known.
Skin contact : Pressure drop through valves and piping may cause extreme cold and frostbite on contact.
Ingestion : Not identified as primary route of entry.
Chronic Health Hazard : None known.

4. First Aid Measures

General advice : None.
Eye contact : None.
Skin contact : If frostbite occurs, flush affected areas with lukewarm water.
Ingestion : None.
Inhalation : Immediately remove victim to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.

5. Fire-Fighting Measures

Suitable extinguishing media	: Carbon dioxide, water spray, or dry chemical.
Specific hazards	: Severe when exposed to heat or flame. Vapors may travel a considerable distance to the source of ignition and flash back. May form explosive mixture in air. Cylinder rupture may occur under fire conditions.
Special protective equipment for fire-fighters	: Wear self contained breathing apparatus and full protective clothing. Keep fire exposed cylinders cool with water spray. If possible, stop the product flow.

6. Accidental Release Measures

Personal precautions	: None.
Environmental precautions	: None.
Methods for cleaning up	: Evacuate and ventilate area. Remove leaking cylinder to exhaust hood or safe outdoor area. Shut off source if possible and remove source of heat.
Additional advice	: None.

7. Handling and Storage

Handling

Secure cylinder when using to protect from falling. Use suitable hand truck to move cylinders.

Storage

Store in well ventilated areas. Keep valve protection cap on cylinders when not in use.

8. Exposure Controls / Personal Protection

Engineering measures

Provide adequate general and local exhaust ventilation to maintain concentration below exposure limits and to avoid asphyxiation.

Personal protective equipment

Respiratory protection	: Use a self-contained breathing apparatus in case of leakage.
Hand protection	: Protective gloves to prevent contact with cold equipment.
Eye protection	: Safety glasses.
Skin and body protection	: Safety shoes when handling cylinders.

9. Physical and Chemical Properties

Form	: Liquefied gas.
Color	: Colorless.
Odor	: Sweet odor.
Vapor pressure	: @ 21.1 C: 158.42 atm
Vapor density	: 1.55 (Air = 1)
Boiling point (C)	: -42.1
Water solubility	: @ 18 C v/v: 0.065
Specific gravity	: @ 20 C: 0.501 (water = 1)
Evaporation rate	: Gas.

10. Stability and Reactivity

Stability : Stable under normal conditions.
Conditions to avoid : Storage in poorly ventilated areas. Storage near a heat source.
Materials to avoid : Oxidizing agents.
Hazardous decomposition products : Carbon oxides form when burned.

11. Toxicological Information

Acute Health Hazard

Ingestion : Not available.
Inhalation : Not available.
Skin : Not available.

12. Ecological Information

No adverse ecological effects are expected.

13. Disposal Considerations

Waste from residues / unused products : Dispose of non-refillable cylinders in accordance with federal, state and local regulations. Allow gas to vent slowly to atmosphere in an unconfined area or exhaust hood. If the cylinders are refillable type, return cylinders to supplier with any valve outlet plugs or caps secured and valve protection caps in place.
Contaminated packaging : Return cylinder to supplier.

14. Transport Information

DOT (US only)

Proper shipping name : Propane
Class : 2.1
UN/ID No. : UN1978
Labeling : Flammable Gas

Further information

Cylinders should be transported in a secure upright position in a well ventilated truck.

15. Regulatory Information

OSHA Hazard Communication Standard (29 CFR 1910.1200) Hazard Class(es)

Material is not listed in appendix A of 29 CFR 1910.119 as highly hazardous chemical.

TCSA

Material is listed in TSCA inventory.

SARA

The threshold planning quantity for material is 10,000 lbs.

Number in Annex 1 of DIR 67/548

Not listed in annex 1.

SAFETY MEETING MSDS

Chemical name:	
Name:	ALUMINUM BRIGHTNER
Where:	Sea Can \ Wash Bay
Why:	Clean aluminum trailers
Special Protective Equipment:	Face shield Neoprene gloves Protective clothing , Plastic apron, long pants and sleeves
Health Hazards:	
Eyes	Contact with eyes may cause permanent damage
Skin	Contact with skin may cause permanent damage
Inhalation	Fumes may irritate respiratory tract, mist should be absolutely avoided
Ingestion:	Swallowing may cause permanent damage but is to corsive to force down
First Aid:	
Skin:	Wash off with water, remove contamenated clothing and wash before reuse
Eye:	Flush eyes with large amounts of water, lifting upper and lower eyelids
Inhalation	Remove to fresh air
Ingestion:	Obtain immediate medical attention
Spill and Special Precautions:	Spills: Neutralize with soda ash and mop or scrape up Store in a cool, dry, and well ventilated area
Fire Hazard	Extremely corrosive material, especially when heated. May liberate flammable hydrogen gas on contact with reactive metals
Phsical Hazards (reactivity Data):	STABLE Materials to avoid: Alkaline materials, reactive metals

Response Attachment A251:

Wasco Coal Terminal Safety Measures and Policies

SAVAGE WASCO SAFETY POLICY

Date: 12-10-13 Review Date:	WASCO COMBUSTIBLE DUST CONTROL PROGRAM	
Developed by: J. Merrell	Approved: V. Penrod General Manager	Related Policies: CPL 03-00-008, NFPA 499 & 654, Hot Work Policy, Housekeeping Procedures

I. PURPOSE

This document provides guidance and establishes standards for housekeeping activities as defined in Section II. The program is in place to ensure compliance with OSHA and NFPA standards regarding combustible dust. Wasco Coal Terminal (WCT) handles coal which has the ability to generate carbonaceous dust when handled. This program outlines the measures taken to eliminate the potential for a combustible dust deflagration or fire which could lead to an explosion. Both deflagration and fires could create an explosive atmosphere if sources are not controlled and housekeeping schedules followed. Strict adherence to housekeeping and material handling techniques will greatly reduce the risk of fire and/or explosion.

II. DEFINITIONS

CLASS II LOCATIONS – Class II locations are those that are hazardous because of the presence of combustible dust. Coal handling areas of the WCT are defined as a Class II locations.

CLASS II, DIVISION 1 LOCATIONS – A Class II, Division I location is a location:

- 1) In which combustible dust *is in the air under normal* operating conditions in quantities sufficient to produce explosive or ignitable mixtures.
- 2) Where mechanical failure or abnormal operation of machinery or equipment might cause such explosive or ignitable mixtures to be produced, and might also provide a source or ignition through simultaneous failure of electric equipment, through operation of protection devices, or from other causes or,
- 3) In which combustible dusts of an electrically conductive nature may be present in hazardous quantities.

CLASS II, DIVISION II LOCATIONS – A Class II, Division II location is a location:

- 1) Where combustible dust *is not normally* in the air in quantities sufficient to produce explosive or ignitable mixtures, and dust accumulations are normally insufficient to interfere with the normal operation of electrical equipment or other apparatus, but combustible dust may be in suspension in the air as a result of infrequent malfunctioning of handling or processing equipment and
- 2) Where combustible dust accumulations on, in, or in the vicinity of the electrical equipment may be sufficient to interfere with the safe dissipation of heat from electrical equipment or may be ignitable by abnormal operation or failure of electrical equipment.

CLASS II COMBUSTIBLE DUST – Class II combustible dusts are divided into Groups E, F, and G. This program only encompasses Group F dust.

COMBUSTIBLE DUST – A combustible particulate solid that presents a fire or deflagration hazard when suspended in air or some other oxidizing medium over a range of concentrations, regardless of particle size or shape.

DEFLAGRATION – Propagation of a combustion zone at a speed that is less than the speed of sound in the unreacted medium.

DUST ACCUMULATION – The total amount of dust that has collected over a period of time.

EXPLOSION – The bursting or rupture of an enclosure or a container due to the development of internal pressure from deflagration.

GROUP F DUST - Atmospheres containing combustible carbonaceous dusts that have more than 8 percent total entrapped volatiles (see ASTM D 3175, *Standard Test Method for Volatile Matter in the Analysis Sample of Coal and Coke*, for coal and coke dusts) or that have been sensitized by other materials so that they present an explosion hazard. Coal, carbon black, charcoal, and coke dusts are examples of carbonaceous dusts.

HOUSEKEEPING ACTIVITIES – Activities primarily associated with the inspection and cleanup of coal dust accumulations which may include record keeping, washing, sweeping, vacuuming and shoveling.

III. RESPONSIBILITIES

Safety Manager: Prepare and maintain on record a procedure relating to housekeeping. Provide assistance and training to the Operation Managers in evaluating and complying with the procedure specific to their operation. Assist with other Savage locations for compliance with this procedure as needed.

Operations Manager: Shall recognize their responsibility to administer the Combustible Dust Control Program including the following:

1. Ensure areas requiring routine and non-routine housekeeping are established.
2. Provide written documentation defining the frequency of housekeeping activities as well as acceptable, area-specific housekeeping standards.
3. Ensure that regular inspections are conducted and documented to verify compliance with the established housekeeping frequencies.
4. Ensure that employees and contractors are trained on the Combustible Dust Control Program and the housekeeping procedures and expectations.
5. Advise all contractors about flammable materials or hazardous conditions of which they might not be aware.

Lead Safety Specialist: Assist with the training, development, and review of the housekeeping procedures. If needed, assist with a job hazard analysis prior to any housekeeping activities. It is of the utmost importance that all schedules, procedures, and inspections are followed for housekeeping activities.

Safety Specialist: Assist the Operations Manager and Lead Safety Specialist in making sure all the housekeeping requirements are being adhered to. Be an additional set of eyes to allow for hazard assessment. Know, understand, and adhere to the provisions of this and all other applicable programs.

All Team Members: Understand what housekeeping activities are and the hazards associated with combustible dust. Follow all provisions of this policy and report any violations or concerns relating to

housekeeping activities to their supervisor, a Safety Specialist, Operations Manager, or the Safety Manager.

IV. DUST CONTAINMENT

Combustible dusts will be contained using best available control technologies, including the following:

1. The WCT utilizes six (6) bag houses to collect fugitive dust emissions at transfer points within the coal handling system. These bag houses are maintained on a regular basis according to the manufacturer's recommended preventative maintenance (PM) schedule.
2. Dusts and spills will be controlled using best practices for material containment including passive dust control systems.
3. If spills or excessively dusty areas are identified, then maintenance will be conducted to address these areas.

V. IGNITION SOURCE CONTROL

Ignition sources at WCT will be controlled using three (3) different control measures.

1. The WCT will follow a strict hot-work policy to ensure that the potential for accidental ignition due to conducting hot work is minimized. WCT and any contractors will utilize the FM Global provided hot work permits and the written hot work policy at all times.
2. The WCT has a designated smoking area near the office. Since lit matches and lighters present an ignition source hazard, this designated area is located a safe distance from any area in which combustible dust may be present.
3. The WCT construction design classified various areas of the coal handling system during construction. The following areas are classified for the identified electrical installations:

Class I, Division II, Group F

Coal silos (4 total)

Class II, Division II, Group F

Railcar unloading building
Conveyor (CV102) tunnel area
Conveyor (CV102) exterior area
Sample tower
Conveyors CV103, CV104, CV105, and CV106
Reclaim conveyor and tunnel
Truck load out

Only electrical equipment (switches, faceplates, motors, lighting, etc...) meeting the appropriate hazard classification will be installed and utilized in each identified area. By using the appropriate equipment and hardware in each of the aforementioned areas, ignition sources caused by electrical malfunction will be eliminated.

All potential ignition sources have been identified and solutions recommended to address the potential ignition sources (See APPENDIX B).

VI. FIRE DETECTION AND SUPPRESSION SYSTEMS

The WCT fire detection system works jointly with the fire suppression system and is installed throughout the coal handling system. The system is designed to detect a fire by the melting of an actuator valve in the system sprinkler heads. Once the valve is melted, the normally balanced air/water pressure differential becomes unbalanced due to air escaping and water fills the normally dry system piping, distributing water to only the detected zone. The heads are designed and spaced so as to spray water along the conveying system components and surrounding areas. It should be noted that detection is only possible in areas where fire suppression is available, since the sprinklers make up the fire suppression system.

The detection/suppression system is not available in the silos. The detection method utilized in the silos includes the use of both CO and methane monitors.

Portable ABC fire extinguishers are also available throughout the facility should the need arise to extinguish an incipient fire. These extinguishers are inspected monthly in-house and annually by a third party.

Preventative maintenance is completed on the fire system annually and the system is inspected annually by a third party.

VII. ATMOSPHERIC MONITORING

A total of eleven (11) CO monitors and nine (9) methane monitors are installed throughout the coal handling system.

The CO monitors are installed to detect the early indications of spontaneous combustion. CO is released when coal begins to degrade, get hot, and spontaneously combust. Guidelines should be set to limit the amount of time coal remains inactive in the silos. As this amount of time increases, so does the likelihood of spontaneous combustion.

The methane monitors are in place to monitor methane concentrations throughout the system. Coal naturally emits methane as it degrades.

Should either gas be present at levels which permit an explosive level or health concerns, the identified handling area will be evacuated and the atmosphere purged with clean ambient air until concentrations are low enough to safely continue.

VIII. HOUSEKEEPING

The primary means of completing housekeeping at the WCT is vacuuming. The fixed-pipe suction system is present in all areas of the system that are enclosed.

Accumulated dust is relocated to a central vacuuming location via sweeping or blowing with compressed air (<15 psi). Use of compressed air allows for cleaning of elevated flat surfaces, walls, ceilings, cable trays, and around installations mounted on walls and ceilings. The dust is allowed time to settle out and the accumulations are vacuumed using grounded hoses attached to the suction system. Several hose attachment locations are available throughout the system.

Housekeeping is completed on a regular schedule (See APPENDIX A) based on process knowledge of the facility. The current "Facility Housekeeping Schedule" is based on the throughput of coal on a weekly basis. Should that throughput ever fluctuate (up or down), the schedule would fluctuate accordingly to ensure that dust accumulations do not exceed recommended accumulation depths to be addressed. The table below titled "Guidance for Area

Electrical Classification” (from NFPA 654-2006) summarizes the recommended housekeeping frequency based on both dust accumulation and electrical classification.

TABLE 1

Depth of Dust Accumulation (inches)	Frequency	Housekeeping Requirement	Area Electrical Classification
Negligible	N/A	N/A	Unclassified
Negligible to 1/32”	Infrequent	Clean up during same shift	Unclassified
Negligible to 1/32”	Continuous/infrequent	Clean so as to maintain an average accumulation of <1/64”	Unclassified; however electrical enclosures should be dust tight
1/32” to 1/8”	Infrequent	Clean up during same shift	Unclassified; however electrical enclosures should be dust tight
1/32” to 1/8”	Continuous/infrequent	Clean so as to maintain an average accumulation of <1/16”	Class II, Division II
>1/8”	Infrequent	Immediately shut down and clean	Class II, Division II
>1/8”	Continuous/infrequent	Clean at frequency appropriate to minimize accumulation	Class II, Division I

Notes:

1/32” is approximately the thickness of a standard paperclip.

1/64” is a thickness sufficient to create a small puffy cloud with each footstep.

The above-mentioned accumulation thickness is based on thicknesses over a surface area of at least 5% of the floor, unless the floor exceeds 20,000ft².

CPL 03-00-008 (OSHA’s Combustible Dust NEP) recommends that immediate cleaning is warranted whenever a dust layer of 1/32” accumulates over a surface area of at least 5% of the floor area of the facility or any given room. This surface area includes but is not limited to:

- Structural members
- Conduit and pipe racks
- Cable trays
- Floors
- Above ceiling
- On and around equipment (leaks around dust collectors and ductwork)

IX. TRAINING

A. All Team Members

- 1) All team members will read the site-specific Combustible Dust Control Program and housekeeping procedures and acknowledge having done so in writing.
- 2) Group training will be provided on an annual basis and may be provided by any combination of the Safety Manager, Operations Manager, Lead Safety Specialists, or Safety Specialists.
- 3) Training for updates to this program and housekeeping procedures will be provided as needed and in a timely manner following the update.

X. GENERAL COMPLIANCE

- A.** Evaluate the work place to determine which areas may be included in housekeeping activities. If necessary request assistance from the Safety Department. – MANAGER/LEAD SAFETY SPECIALIST
- B.** Perform an informal job hazard analysis prior to any housekeeping activities. This analysis will allow all employees who are involved to understand the hazards involved and what to do in case of an emergency. – SAFETY MANAGER/OPERATIONS MANAGER/LEAD SAFETY SPECIALIST/SAFETY SPECIALIST.
- C.** Train and notify all employees of the proper procedures for housekeeping activities. The purpose of this training will be to give recognition of hazards and application of adequate procedures to eliminate or mitigate the hazards according to standards – SAFETY MANAGER/OPERATIONS MANAGER
- D.** Retraining must be done whenever an employee changes job assignments, equipment changes are made, or a job process changes. Managers may also take it upon themselves to retrain when they feel that an employee does not understand these procedures. – OPERATIONS MANAGER

XI. PROCEDURES

A. Scheduling and Resource Allocation

- 1) Housekeeping activities are to be performed in each designated zone as defined in the attached “Facility Housekeeping Schedule” (See Appendix A).
- 2) Operations managers are to manage their time and resources in a manner that balances delivering coal to the silos, dumping trains, loading trucks, and performing housekeeping activities in the most appropriate manner.

B. Housekeeping Activities

Site-specific housekeeping procedures are written for detailed housekeeping instructions of the following areas:

- Railcar unloading building and load out system
- Reclaim system
- Truck load out system

C. Inspection Schedule

- 1) An inspection and assessment of the housekeeping activities will be performed regularly through daily walk downs and monthly safety inspections.
- 2) Any deficiencies noted in the inspection report are to be corrected in a timely manner.

XII. SAFETY

A. PERSONAL PROTECTIVE EQUIPMENT (PPE)

- 1) Avoid breathing dust and contact with eyes. Standard PPE is to be worn during all housekeeping activities which includes hard hat, safety glasses, respiratory protection, steel toed boots and, if necessary, hearing protection.

XIII. CONTRACTORS

A. General

- 1) Contractors performing any work on site shall be provided with an overview of the housekeeping policy during the orientation process. Completion and signature of the Savage Contractor Orientation form will serve as acknowledgement of this policy and their commitment to adhere to the defined housekeeping standards.
- 2) Contractors participating in hot work activities at WCT will adhere to the Hot Work Policy which includes specific language regarding housekeeping activities as it relates to hot-work.

APPENDIX A

FACILITY HOUSEKEEPING SCHEDULE

Wasco



Zone	Area	Method	Min Frequency
Railcar building	Ground level	Vacuum	Twice weekly
	Feeder level	Vacuum	Twice weekly
Tunnel (CV 102)	Tunnel area	Vacuum	Twice weekly
Sample tower	Each floor	Vacuum	Twice weekly
Reclaim tunnel	Tunnel	Vacuum	Twice weekly
Truck load out	Load out area	Sweep/vacuum	Twice weekly
Entire handling system	All	Wash/sweep/vacuum	Annually

The identified frequency is based on the operational throughput of two (2) unit trains a week. Should the throughput change, the housekeeping schedule you change to reflect the recommended cleaning schedule referenced in TABLE 1.

APPENDIX B
IGNITION SOURCE WORKSHEET

WASCO IGNITION SOURCE WORKSHEET

Areas	Potential ignition sources	Protection equipment/control	Fuel handling instructions	Storage procedures
Coal silos	Static electricity-Faulty equipment/electrical components-coal dust build up-Hot coal	CO and methane monitoring	N/A	Limit amount of time coal remains stagnant in silos
Railcar unloading building	Faulty equipment/electrical components-coal dust build up	Automatic fire system-frequent walk thru inspections-weekly cleaning-CO and methane monitoring	Open car doors over grizzly only to avoid spills	N/A
CV102 tunnel area	Faulty equipment/electrical components-coal dust build up	Automatic fire system-frequent walk thru inspections-weekly cleaning-CO and methane monitoring	Ensure coal stays on conveyor belts to avoid spills	N/A
CV102 external area	Faulty conveyor equipment-faulty electrical components	Automatic fire system-frequent walk thru inspections-weekly cleaning-CO and methane monitoring	Ensure coal stays on conveyor belts to avoid spills	N/A
Sample tower	Faulty conveyor equipment-faulty electrical components	Automatic fire system-frequent walk thru inspections-weekly cleaning-CO and methane monitoring	Ensure coal stays on conveyor belts to avoid spills	N/A
CV 103, CV104, CV105 & CV106	Faulty conveyor equipment-faulty electrical components	Automatic fire system-frequent walk thru inspections	Ensure coal stays on conveyor belts to avoid spills	N/A
Reclaim conveyor	Faulty conveyor equipment-faulty electrical components	Automatic fire system-frequent walk thru inspections-weekly vacuuming-CO and methane monitoring	Ensure coal stays on conveyor belts to avoid spills	N/A
Truck load out	Faulty equipment/electrical components-coal dust build up	Automatic fire system-frequent walk thru inspections-weekly vacuuming	Ensure trucks are properly aligned during load out to avoid spills	N/A

	<p style="text-align: center;">SAVAGE – REFINERY SOLUTIONS GROUP INJURY & ILLNESS PREVENTION PROGRAM</p> <p style="text-align: center;">HOUSEKEEPING</p>	<p>Policy Number: 2-2</p>
<p>Developed by: Official Safety Solutions</p>	<p>Reviewed By: </p>	<p>Date Reviewed: Date Revised:</p>

1.0 POLICY

All work areas shall be maintained in an orderly fashion at all times and employees who engage in material handling and lifting shall utilize proper techniques to avoid injury.

2.0 PURPOSE AND SCOPE

This Injury and Illness Prevention Program (IIPP) provides the minimum requirements to be followed when maintaining orderliness and material handling in the workplace

This IIPP applies to all employees and subcontractors on all Savage projects.

3.0 REFERENCES

S7 Focus Area 7 “Professionalism: Employees, Facilities and Equipment reflect a Professional Image”

4.0 ATTACHMENTS

This Section has been intentionally left blank.

5.0 DEFINITIONS

This Section has been intentionally left blank



6.0 RESPONSIBILITIES

6.1 Safety Support Team

- 6.1.1 The Safety Support Team will prepare and maintain a company-wide safety policy.
- 6.1.2 Provide assistance to the various locations, as requested, in the implementation of this policy.
- 6.1.3 Conduct regularly scheduled reviews of the policy to ensure compliance with the S7 operating system and any applicable regulatory agencies.

6.2 Operations Managers and Area Supervisors

- 6.2.1 Operations Managers and Area Supervisors will ensure that the project is maintained in a clean and efficient manner for field projects.

	<p style="text-align: center;">SAVAGE – REFINERY SOLUTIONS GROUP INJURY & ILLNESS PREVENTION PROGRAM</p> <p style="text-align: center;">HOUSEKEEPING</p>	<p>Policy Number: 2-2</p>
<p>Developed by: Official Safety Solutions</p>	<p>Reviewed By:</p> 	<p>Date Reviewed: Date Revised:</p>

6.2.2 Operations Managers and Area Supervisors responsible for employees performing work covered by the Company’s Housekeeping and Material Handling IIPP must:

- Using SHAPS, confirm each job has been properly evaluated for hazards, and that these hazards have been properly eliminated or controlled.
- Ensure employees are aware of the requirements of this IIPP, as well as any hazards associated with their work.
- Continuously monitor the work to assure compliance with this IIPP.

6.3 Employees

6.3.1 Each employee working in a field or office setting shall maintain their work area free of trash, excess scrap material, and tools not in use.

6.3.2 Employees are to practice good lifting techniques and use appropriate personal protective equipment when moving materials.

6.3.3 Employees must comply with the provisions of this IIPP as per training and instructions received.

7.0 GENERAL PROCEDURES

7.1 Housekeeping procedures



The procedures listed below as well as good work practices and cleanliness can prevent most occurrences and are minimum requirements for all work areas.

7.1.1 Keep air hoses, welding leads, and extension cords out of doorways and walkways and off the floor to prevent tripping.

7.1.2 Each person is responsible for keeping his immediate work area free of trash, excess scrap material, and tools not in use.

7.1.3 Immediately clean up all spilled liquids and barricade the area if necessary.



7.1.4 Stack materials and supplies in a safe manner, out of walkways.

	<p style="text-align: center;">SAVAGE – REFINERY SOLUTIONS GROUP INJURY & ILLNESS PREVENTION PROGRAM</p> <p style="text-align: center;">HOUSEKEEPING</p>	<p>Policy Number: 2-2</p>
<p>Developed by: Official Safety Solutions</p>	<p>Reviewed By:</p> 	<p>Date Reviewed: Date Revised:</p>

- 7.1.5 Do not pile trash or materials in areas where they block exits or fire doors, fire extinguishers, electrical disconnects, or safety showers.
- 7.1.6 Stack or pile safely, always start with a safe base. Uneven surfaces of floor or yard should be leveled. Make sure the pile will not shift. Barrels or other round objects that may roll should be checked.
- 7.1.7 Pile to a safe predetermined height by floor load limit, by types of materials and strength of containers, or by requirements of fire protection. Cross-tile (interlock) pile if necessary. There must be a space of at least 18 inches between top of pile and any sprinkler heads. More space must be allowed if materials can burn easily. Never store items close to open light bulbs or hot pipes.
- 7.1.8 Trash containers shall be emptied on a regular basis as not to allow debris to gather next to them.

7.2 Manual Material Handling and Lifting

- 7.2.1 Inspect the object that is to be lifted to estimate its size and weight and to see if there are nails, splinters, or other items that might cause injury.
- 7.2.2 Procedure to follow when lifting:
 - Crouch as close to object as practical.
 - Get a good grip.
 - Keep feet apart and bend knees.
 - Lift slowly by straightening legs. (Keep back relatively straight; leg muscles, not back, should do work.)
 - Avoid awkward lifting positions. Shift body until a straight lift can be made.

	<p style="text-align: center;">SAVAGE – REFINERY SOLUTIONS GROUP INJURY & ILLNESS PREVENTION PROGRAM</p> <p style="text-align: center;">HOUSEKEEPING</p>	<p>Policy Number: 2-2</p>
<p>Developed by: Official Safety Solutions</p>	<p>Reviewed By:</p> 	<p>Date Reviewed: Date Revised:</p>

- 7.2.3 If object must be lifted more than waist high--first, lift load waist high then rest it on a support, if available, while changing grip. Next, bend knees again to give added leg muscle power for final lift.
- 7.2.4 When carrying an object, do not try to change its position or adjust grip while in motion. Stop and rest the object against a support while making the change.
- 7.2.5 When changing direction of travel, do not twist, instead turn the entire body, including feet.
- 7.2.6 To set the load down, bend legs, not back. Follow the lifting procedure in reverse order. Always set one corner of the load down first, then slide hands out so they will not get pinched.
- 7.2.7 Get help before handling a large or heavy object. When two or more carry a load, it should be decided beforehand how it is to be handled. Routes and clearances should be checked, and one man should act as the leader. Leader should position himself so he can watch and coach the others. Persons carrying a long object should be on the same side of the project and remain in step with each other.
- 7.2.8 If an object appears to be too heavy, get someone to assist you.

8.0 TRAINING

All employees shall be instructed in the housekeeping and lifting requirements outlined in this IIPP.

9.0 INSPECTION AND STORAGE

This Section has been intentionally been left blank.

Response Attachment A252:

Wasco Coal Terminal Emergency Response Plan and Heat Stress
Prevention Policy



**Emergency Response Plan
Wasco Coal Terminal
Wasco, CA 93280**

**Operated by:
Savage Services Corporation
1040 H Street
Wasco, CA 93280**

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Emergency Response Plan

Operated by Savage Services Corporation
Wasco
1040 H Street
Wasco, CA 93280

IN THE EVENT OF AN EMERGENCY:

SAFETY FIRST: Take all actions necessary to protect the life and health of all persons in the area.

CALL FOR HELP: Call local emergency agencies: 911. Alert each member of the team of the situation. See pages 14 thru 28 for specific emergency situations.

CONSULT YOUR SAFETY MANUAL (FLOURESENT YELLOW): Section 108 for Post Occurrence Procedure.

NOTIFY: Follow the flow chart of people to notify of the situation. (page 3)

CHAIN OF COMMAND

ERP Administrator:
Incident Commander/
Savage Team Leader

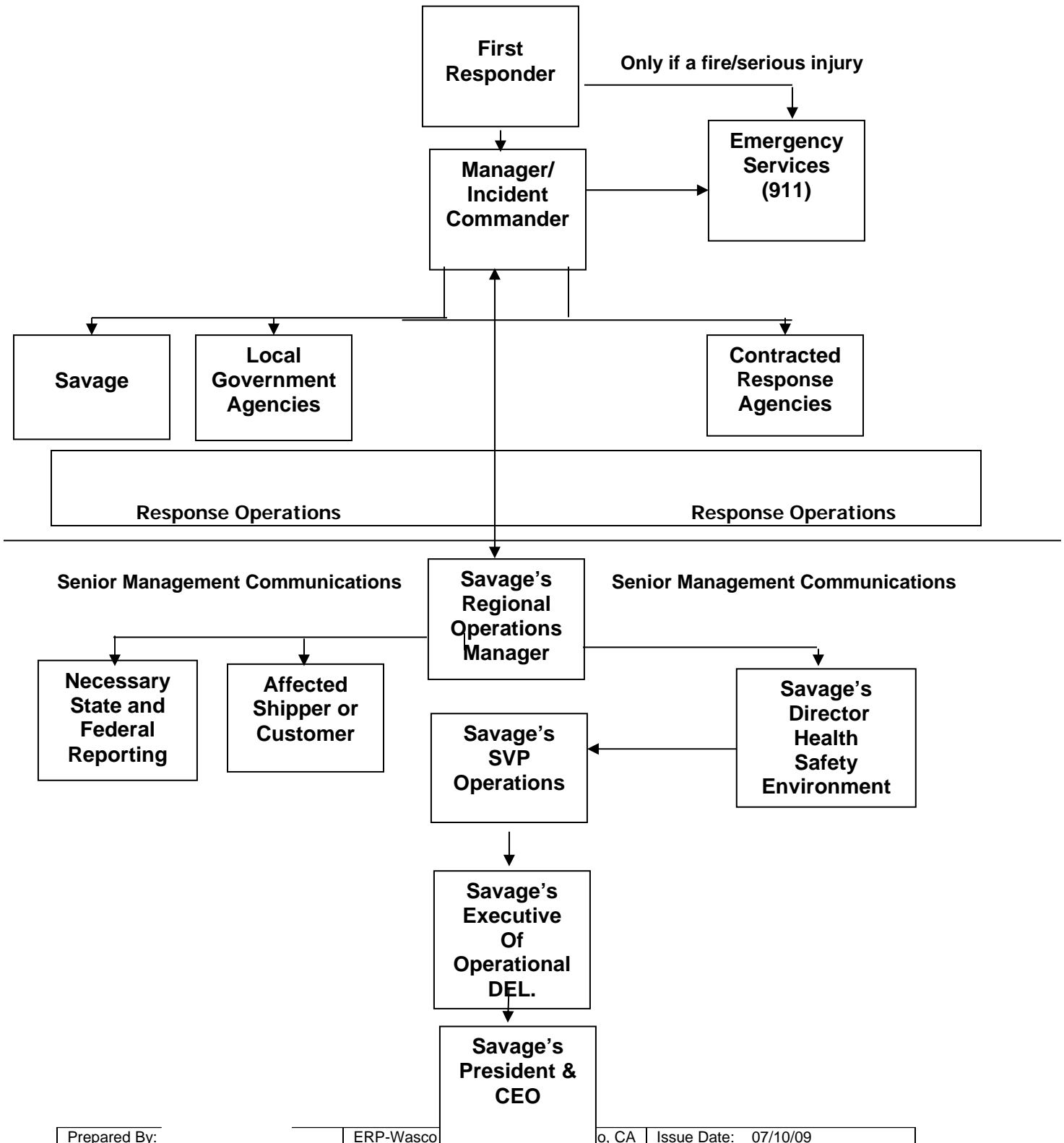
Alternate Incident Commander/
Savage Team Leader

Savage Team Members:

Savage Team Members:

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Communications Flowchart



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**Communications
PRIMARY CONTACT LIST**

Contacts	Day Time Numbers	After Hours Numbers
	FIRST RESPONDER	
FIRE DEPARTMENT	911	Same
POLICE	911	Same
AMBULANCE	911	Same
Bakersfield Memorial Hospital 420 34 th Street Bakersfield, CA 93301	(661) 327-4647	Same
NATIONAL RESPONSE CENTER	(800) 424-8802	Same
POISON CONTROL	(800) 222-1222	Same
Public Works Director/Interim City Manager		

SECONDARY CONTACT LIST

Contacts	Day Time Numbers	After Hours Numbers
SHIPPER	Shippers Contact will be notified of any reportable spill.	

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➤ 1.1 DESCRIPTION OF WASCO, CA OPERATION:

This facility is occupied six days per week around the clock. There is the potential of having truck operations (loading) occurring on the seventh day. However, there are typically no production operations occurring on the seventh day. The entire site does remain unoccupied during this period. They operate approximately 350 days per year. There is no guard service provided. Fire detection is provided throughout the site and monitored by a UL listed central station – Security Systems. They are monitoring automatic sprinkler system water flow, fire pump power and running, smoke and heat detection. There is also intrusion detection provided. There is no tamper supervision provided for the various automatic

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sprinkler system valves. The valves are all locked in the open position. A 7-ft. high barbed wire chained link fence surrounds the entire complex.

This is a 5-acre site with approximately one-half of the complex taken up by auto and truck parking and railroad sidings. There are a total of 11 buildings on site and two main concrete/metal panel constructed tunnels. There are rubber belted conveyor systems running the length of the tunnels. Automatic sprinkler protection is provided over the conveyor system. One tunnel leads from the Railroad Unloading Building to the Sample Tower Building. The other tunnel leads from the Silos to the Loadout Building.

➤ **1.2 WHAT IS THE PURPOSE OF THIS PLAN?**

This Emergency Response Plan is to be utilized by the Wasco Terminal in the event of a fire, explosion, accidental release, or other natural or man-made emergency at this terminal.

The purpose of this plan is to minimize hazards to human health, the environment, and property. The intent of this plan is to protect the work force, the surrounding community, the environment, and property from fire, explosion, or any unplanned sudden or non-sudden accidental release of hazardous or flammable commodities at this location, or other natural disasters.

➤ **1.3 WHEN IS THE PLAN TO BE IMPLEMENTED?**

In the event that one or more of the following emergencies occur, this contingency plan will be implemented immediately.

- Fire & Explosion: Any fire or potential fire that involves a commodity has the potential to spread, or has the potential to release toxic fumes. Any explosion or potential explosion that occurs in, on, or near the facility.
- Uncontrolled release of materials: Any release or potential release of hazardous material, petroleum-based material, or any material that may cause undesirable environmental damage.
- Acts of God: Any incidents related to weather or acts of God, which cause the facility to be in imminent danger.
- Security Incidents: Including terminal break-ins and bomb threats.

1.4 Materials on Site

Record#	Chemical Name	Unit Name	Max Daily Amount	Unit of Measure		
<input type="button" value="Edit"/>	<input type="button" value="Delete"/>	HZ0024891	ACETYLENE	Fixed Containers at Site	310.0000	Cubic Feet
<input type="button" value="Edit"/>	<input type="button" value="Delete"/>	HZ0024898	ALUMI KLEEN	Fixed Containers at Site	10.0000	Gallons
<input type="button" value="Edit"/>	<input type="button" value="Delete"/>	HZ0024892	ARGON	Fixed Containers at Site	800.0000	Cubic Feet
<input type="button" value="Edit"/>	<input type="button" value="Delete"/>	HZ0024896	CARBON DIOXIDE	Fixed Containers at Site	550.0000	Cubic Feet

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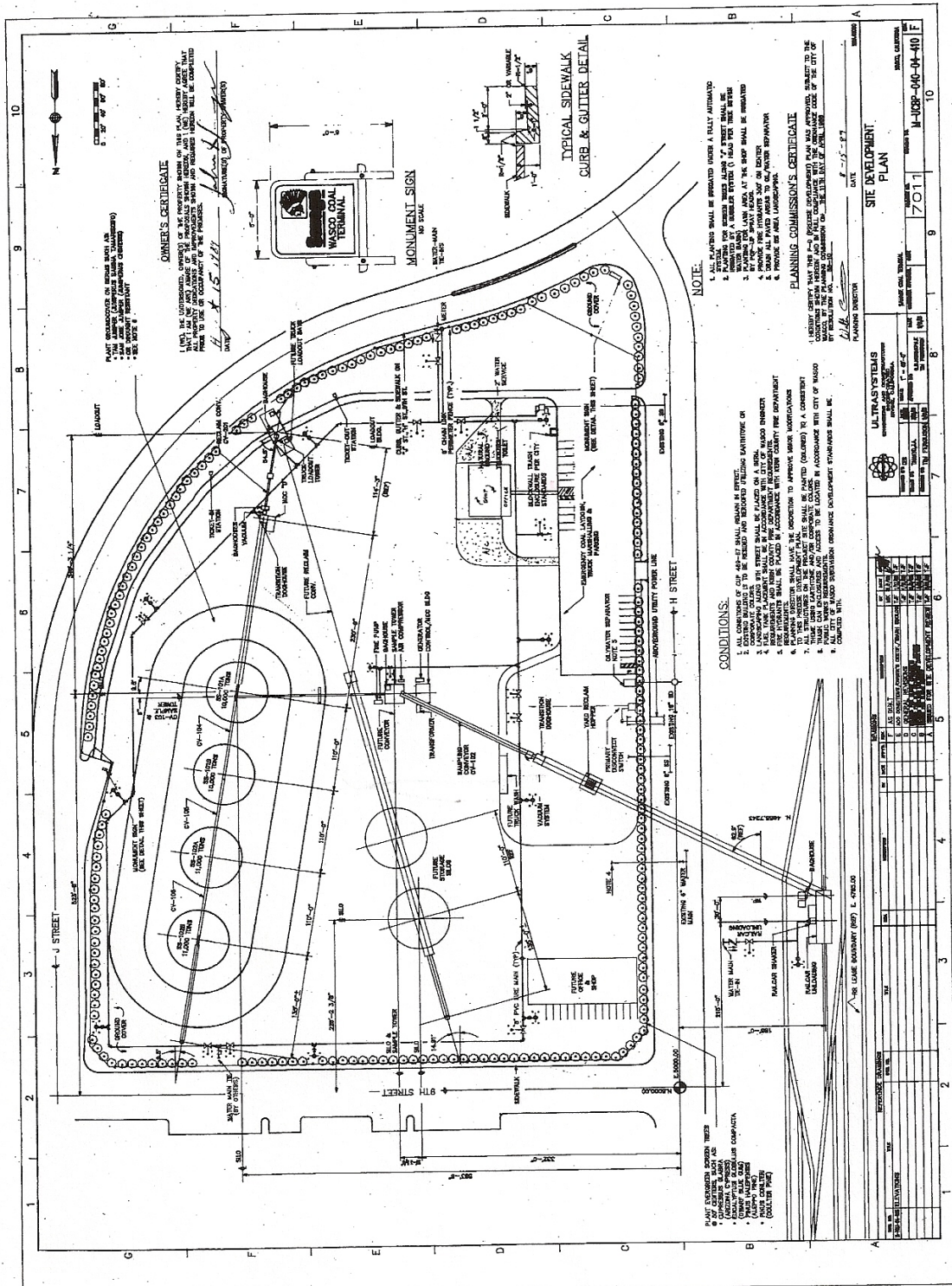
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Edit	Delete	NEW4112	Coal	Fixed Containers at Site	42,000.0000	Tons
Edit	Delete	HZ0024889	HYDRAULIC OIL	Fixed Containers at Site	150.0000	Gallons
Edit	Delete	HZ0024888	MOTOR OIL	Fixed Containers at Site	450.0000	Gallons
Edit	Delete	HZ0024895	NITROGEN	Fixed Containers at Site	282.0000	Cubic Feet
Edit	Delete	HZ0024890	OXYGEN	Fixed Containers at Site	800.0000	Cubic Feet
Edit	Delete	HZ0024897	PROPANE	Fixed Containers at Site	1250.0000	Gallons
Edit	Delete	HZ0024894	SYNTHETIC OIL	Fixed Containers at Site	55.0000	Gallons
Edit	Delete	HZ0024893	Used Oil	Fixed Containers at Site	90	Gallons

1.5 Facility Map

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Savage Proprietary



AUTHORIZATION FOR NECESSARY RESOURCES

I hereby authorize the emergency coordinators at this facility to commit the necessary resources

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in order to prevent and minimize harm to human health, the environment, and property in the event of an emergency at the facility.

Director Health, Safety, and Environmental
Savage Services Corporation

Date 07 / 10 /2009

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1.7 Command Structure and Personnel

Emergency Coordinators

In the event of an emergency, the following persons are empowered to act as the Emergency Coordinators (in order of preference).

<u>NAME</u>	<u>TITLE</u>	<u>HOME PH</u>	<u>PAGER</u>	<u>CELL PH</u>

There will be an Emergency Coordinator available (either on the premises or on call) at ALL times.

Communications Clerk

In the event of an emergency, the following persons are empowered to act as the Communications Clerk (in order of preference).

<u>NAME</u>	<u>TITLE</u>	<u>HOME PH</u>	<u>PAGER</u>	<u>CELL PH</u>

1.8 Emergency Operations Center (EOC)

The terminal office will serve as the emergency operations center (EOC) for any emergency affecting the terminal. If the office is untenable due to fire, vapor release or terminal evacuation a temporary EOC will be established off site at the gathering point.

If an off-site EOC is established the Emergency Coordinator will take the following material with them to ensure continuity of communications and response:

1. Copy of this Emergency Response Plan.
2. Copy of facility MSDS book.
3. Customer contact list.
4. Means of communication (cellular telephone, terminal portable radio).
5. Terminal roster of on-duty personnel and visitor sign-in sheet for personnel accountability at the gathering point in the event of an evacuation.

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1.9 Facility Emergency Notification Code System

The terminal uses portable radios for normal operating communications. These radios operate on a designated private frequency. The terminal emergency notification system will use these portable radios or cell phones for notification of both initial emergency and personnel notification of emergency type. Prior to being allowed on the terminal yard, all employees, contractors and visitors will be provided with a safety briefing, which includes this notification system and incident coding.

Employees are trained and will receive periodic re-training on incident reporting and the notification code system. Records of this training will be maintained as part of the terminal safety training procedures.

COLOR CODE	DEFINITION	REQUIRED ACTION
RED	Immediately Evacuate	Shut down all equipment, all personnel assemble at the exit(s)
YELLOW	Spill Response	Every available trained person respond to the given location of the incident
BLUE	Fire	Telephone 911
GREEN	Personal Injury	Closest person respond to the given incident location, contact the Manager
CLEAR	All Clear	Incident has ended, return back to normal work

Incident Termination: The Emergency Coordinator has the sole authority and responsibility to sound the all clear based upon incident conditions, local responders or other authority.

Upon notification or realization of an emergency condition, the Emergency Coordinator will use the appropriate action guides to take protective actions and notifications to necessary off-site resources and internal chain of command contacts, see pages 2 & 3. The Savage Operations Manager will do notifications to State and Federal agencies.

During ANY emergency condition, the Emergency Coordinator's actions must be based upon the following decision factors:

1. Protection of life, health, and safety of terminal employees, contractors, visitor and the general public.
2. Protection of the environment including surface water, air, and land receptors.
3. Protection of property, equipment, and customer products.
4. System and business restoration.

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In no case will business restoration take priority over the protection of human health and safety, the environment or property protection.

If the Emergency Coordinator judges that the threat may extend to outside the facility, the Emergency Coordinator will notify, or cause to be notified, the proper authorities for evacuation (Emergency Services). Only the proper emergency services (Police and Fire Departments) will direct evacuation of persons outside this facility.

Upon hearing a General Alarm of CODE RED, all office, yard and shop personnel will do the following unless otherwise instructed by the Emergency Coordinator or his/her designee:

- A. Shut down all on-going systems (valves, motors, pumps, etc.)
- B. Clear aisles and drives for emergency traffic/vehicles
- C. Report to an assembly area. There are four scenarios and three assembly areas for this facility. The scenarios and assembly areas are:
 - 1. Hazardous release, fire, any situation requiring evacuation:
Assemble at the entrance to the truck yard.
 - 2. Hazardous release, fire, any situation requiring evacuation:
Assemble at the inside entrance of yard across the street
 - 3. Tornado: Men or Women's bathroom located at the terminal entrance.
 - 4. Earthquake: Take cover under desk or table, stay away from glass and windows, evacuate as soon as possible.
- D. The Emergency Coordinator will ensure that all persons and personnel, outside vendors, and visitors are present and accounted for.

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1.10 Media Interaction

No person at the facility is authorized to speak or respond to the media when this plan is enacted. All inquiries by the media shall be referred to the following person with Savage Services Corp.:

The only appropriate response to the media is as follows: No one at this facility, including myself, is authorized to respond to a media inquiry. Any request for information should be addressed to

The media should be kept as far away as possible. The security forces at the facility should be in charge to keep all spectators, including the media, at a safe distance.

Unless specifically authorized by (or designee). At no time will the media be allowed on the facility property, to take photographs, video or audio recordings. If the media requests to take photographs, video or audio recordings, they may only do so if it is approved by

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Section II: Emergency Procedures

2.1 Fires and/or Explosion



Fire Department: 911
Police Department: 911
Ambulance: 911

- STEP 1:** Incident occurs and fire/explosion results.
- STEP 2:** Terminal office is notified via radio or in person. The Emergency Coordinator (EC) is determined.
- STEP 3:** EC communicates the appropriate Emergency Code throughout the terminal.
- STEP 4:** EC assesses extent of emergency.
 - Direct personnel to appropriately respond, OR
 - Direct Evacuation and account for all personnel
- STEP 5:** EC makes outside Responder Notification to obtain assistance in emergency and make other necessary calls to sensitive receptors, as required.
- STEP 6:** Provide first aid or other assistance to injured persons.
- STEP 7:** Take steps to direct emergency responders to location of fire.
- STEP 8:** Secure perimeter during response. If necessary, obtain security.
- STEP 9:** Monitor situation, providing updates to Savage Regional Management.
- STEP 10:** Monitor situation, providing updates to Savage Operations Manager for required state and federal release/spill reporting.
- STEP 11:** Contact customer(s) affected. Please write information below:
- STEP 12:** Terminate Incident
- STEP 13:** Conduct investigation
- STEP 14:** Terminal Manger completes incident report
- STEP 15:** Corrective Action Review- Using established operator incident conference call process.

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STEP 16: Complete remediation of any spilled materials and assure proper disposal of wastes.

All soil, debris, wastes, and liquids resulting from the release must be treated as Hazardous Waste until testing determines the waste to be non-hazardous. Any hazardous waste must be removed in accordance to Federal, State and Local laws. No waste should be removed without the knowledge and consent of the Emergency Coordinator.

Residues from fires or leaks will be solidified with appropriate inert absorbent and placed in appropriate DOT approved containers for transportation by an authorized disposal firm to permitted disposal facilities. Pumps, absorbents, and salvage containers are to be maintained at the facility for these purposes.

STEP 17: Prior to resumption of any transfer operation, any safety equipment used in an emergency will be cleaned or replaced and returned to a state of readiness.

Note: While terminal personnel routinely handle all of the products within the terminal while performing product transfers, large spills may expose employees to potential exposure levels above available personal protective clothing.

The terminal is equipped with portable A/B/C fire extinguishers and employees receive documented annual fire extinguisher training.

Employees are not trained, equipped, or qualified to act beyond their first response training to act as a fire brigade or team. Fire fighting efforts that involve uncontrolled spills of flammable liquids, fires involving ordinary combustibles beyond the incipient stage or that require more than one fire extinguisher will require notification of the local fire department in a timely manner.

Delay in notification will result in a larger fire and possible injury to terminal personnel.

In no case will the EC direct or allow employees to perform spill containment, fire suppression, clean up or offensive leak control beyond their training or PPE capability. Only properly equipped and trained responders will be used for these activities.

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2.2 Product Spills



Fire Department: 911
Police Department: 911
Ambulance: 911

- STEP 1:** Incident occurs and spill results.
- STEP 2:** Terminal office is notified via radio or in person. The Emergency Coordinator (EC) is determined.
- STEP 3:** EC communicates the appropriate Emergency Code throughout the terminal and contacts the neighboring business of the emergency.

ALL TRANSFERS MUST BE STOPPED UNTIL ALL CLEAR SIGNAL IS SOUNDED.

The warning should include type and the amount of product spilled/leaked and location of the spill. Emergency Coordinator requests direction of current wind direction of yard personnel.

- STEP 4:** Whoever has a terminal yard tractor(s) with a bucket will respond to spill area as soon as alarm is announced if safe to approach from up wind direction.
- STEP 5:** An employee will be directed to facility drainage or outfall gate(s) or valve(s) to close them as soon as possible, if applicable. This employee will report to the EOC that the drains are secured.
- STEP 6:** EC assesses extent of emergency.
 - Direct personnel to appropriately respond, OR
 - Direct Evacuation and account for all personnel
- STEP 7:** Provide first aid or other assistance to injured persons.
- STEP 8:** If damage assessment shows the spill is contained and can be handled by terminal personnel with available equipment and protective clothing, the EC will direct spill clean up with terminal resources.

If extent of spill is beyond terminal capabilities, the EC will make outside Responder Notification to obtain assistance and makes other necessary calls to sensitive receptors, as required.
- STEP 9:** Secure perimeter during response. If necessary, obtain security.
- STEP 10:** Monitor situation, providing updates to Savage Operations Manager for required state and federal release/spill reporting.
- STEP 11:** Monitor situation, providing updates to Savage Regional Personnel.

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- STEP 12:** Make notification to customer(s) affected. Please write information
- STEP 13:** Terminate Incident
- STEP 14:** Conduct investigation
- STEP 15:** Terminal Manger completes incident report
- STEP 16:** Corrective Action Review- Using established operator incident conference call process.
- STEP 17:** Complete remediation of any spilled materials and assure proper disposal of wastes.

All soil, debris, wastes, and liquids resulting from the release must be treated as Hazardous Waste until testing determines the waste to be non-hazardous. Any hazardous waste must be removed in accordance to Federal, State and Local laws. No waste should be removed without the knowledge and consent of the Emergency Coordinator.

Residues from fires or leaks will be solidified with appropriate inert absorbent and placed in appropriate DOT approved containers for transportation by an authorized disposal firm to permitted disposal facilities. Pumps, absorbents, and salvage containers are to be maintained at the facility for these purposes.

- STEP 18:** Prior to resumption of any transfer operation, any safety equipment used in an emergency will be cleaned or replaced and returned to a state of readiness.

Note: While terminal personnel routinely handle all of the products within the terminal while performing product transfers, large spills may expose employees to potential exposure levels above available personal protective clothing.

In no case will the EC direct or allow employees to perform spill containment, fire suppression, clean up or offensive leak control beyond their training or PPE capability. Only properly equipped and trained responders will be used for these activities.

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2.3

Vapor Release



Fire Department: 911
Police Department: 911
Ambulance: 911

- STEP 1:** Incident occurs and vapor release results.
- STEP 2:** Terminal office is notified via radio or in person. The Emergency Coordinator (EC) is determined.
- STEP 3:** EC sounds the appropriate Emergency Code throughout the terminal and contacts the neighboring businesses to advice of emergency.

ALL TRANSFERS MUST BE STOPPED UNTIL NOTIFIED BY THE ALL CLEAR SIGNAL.

The warning should include type of vapor released, if known, location of the release and current wind direction.

- STEP 4:** EC assesses extent of emergency and wind direction.
 - Direct personnel to appropriately respond from an upwind direction, OR
 - Direct Evacuation to upwind evacuation point and account for all personnel
- STEP 5:** If damage assessment shows the spill is contained and can be handled by terminal personnel with available equipment and protective clothing, the EC will direct spill clean up with terminal resources.

 If extent of spill is beyond terminal capabilities, the EC will make outside Responder Notification to obtain assistance and makes other necessary calls to sensitive receptors, as required.
- STEP 6:** Provide first aid or other assistance to injured persons.
- STEP 7:** Secure perimeter during response. If necessary, obtain security.
- STEP 8:** Monitor situation, providing updates to Savage Operations Manager for required state and federal release/spill reporting.
- STEP 9:** EC contacts Savage Services Regional Management.
- STEP 10:** Make notification to customer(s) affected. Please write information below:
Customer:
- STEP 11:** Terminate Incident
- STEP 12:** Conduct investigation

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- STEP 13:** Operations Manger completes incident report
- STEP 14:** Corrective Action Review- Using established operator incident conference call process.
- STEP 15:** Complete remediation of any spilled materials and assure proper disposal of wastes.

All soil, debris, wastes, and liquids resulting from the release must be treated as Hazardous Waste until testing determines the waste to be non-hazardous. Any hazardous waste must be removed in accordance to Federal, State and Local laws. No waste should be removed without the knowledge and consent of the Emergency Coordinator.

Residues from fires or leaks will be solidified with appropriate inert absorbent and placed in appropriate DOT approved containers for transportation by an authorized disposal firm to permitted disposal facilities. Pumps, absorbents, and salvage containers are to be maintained at the facility for these purposes.

- STEP 16:** Prior to resumption of any transfer operation, any safety equipment used in an emergency will be cleaned or replaced and returned to a state of readiness.

Note: While terminal personnel routinely handle all of the products within the terminal while performing product transfers, large spills may expose employees to potential exposure levels above available personal protective clothing.

In no case will the EC direct or allow employees to perform spill containment, fire suppression, clean up or offensive leak control beyond their training or PPE capability. Only properly equipped and trained responders will be used for these activities.

2.4

Hurricanes



Fire Department:

911

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Police Department: 911

Ambulance: 911

During Hurricane season (June-November) be aware of Hurricane advisories for Hurricane watches and warnings.

HURRICANE WATCH ISSUED

- STEP 1:** When a hurricane watch is issued, an EC will be determined.
- STEP 2:** The EC will sound appropriate code.
- STEP 3:** Stay tuned to broadcasts, such as a NOAA Weather Radio, or television for additional advisories.
- STEP 4:** EC makes appropriate contacts for community emergency response.
- STEP 5:** EC contacts Savage Services Regional Management
- STEP 6:** The facility will prepare for shutdown procedures and evacuation, in case it is advised. See steps for Hurricane Warning.

HURRICANE WARNING ISSUED

- STEP 1:** When a HURRICANE WARNING is issued, a hurricane is imminent in 24 hours. An EC will be determined. If the warning was upgraded from a Hurricane Watch, an EC was already established.
- STEP 2:** The EC will sound appropriate warning and facility shutdown procedures are initialized to include:
 - a. All transfers terminated and railcars and truck trailers secured.
 - b. Transfer equipment moved to central, protected location if possible
 - c. All power outlets shut off at the outbox
 - d. Steam systems safely shutdown
 - e. Surface water drains open
 - f. Computer equipment moved away from windows or protected with plastic covers.
 - g. Storm shutters or window covers applied if available (tape on windows is ineffective).
- STEP 3:** EC contacts appropriate agencies for community emergency response.
- STEP 4:** EC contacts appropriate owner and operator chain of command to report terminal status and further protective action.

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- STEP 5:** Secure facility records, computers, and other important office documents for storage or for a move to another location.

- STEP 6:** Secure facility equipment, structures and above ground storage tanks.

- STEP 7:** Evacuate trailers to more secure permanent terminal structures.

- STEP 8:** Evacuate terminal immediately, if advised by local authorities.

- STEP 9:** After storm has passed and it is safe to do so, complete a report describing property and equipment damage, customer product damage or possible contaminations, theft of Savage Services equipment or other loss and damages.

2.5

Tornados

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Fire Department: 911
Police Department: 911
Ambulance: 911

BEFORE A TORNADO

- STEP 1:** Designate an Emergency Coordinator and an ERP team. Assign responsibility to specific employees for advance arrangements to initiate the plan.
- STEP 2:** Develop a contingency plan to allow for continued business operations.
- STEP 3:** Practice periodic tornado drills so everyone knows how to respond if a tornado is approaching.
- STEP 4:** Secure large exterior appendages that could cause major damage if torn free.
- STEP 5:** Tie down items that could be blown over in high winds.
- STEP 6:** Find interior area's in buildings that are secure.

TORNADO WATCH ISSUED

- STEP 1:** The EC sounds appropriate code.
- STEP 2:** Use spotters with two-way communication to provide a tornado watch and premise information.
- STEP 3:** The EC are to be tuned to broadcasts, such as a NOAA Weather Radio, or television for additional advisories.
- STEP 4:** EC makes appropriate contacts for community emergency response and alerts the ERP team to be prepared to:
 1. Move objects inside buildings that could become airborne by winds that come inside.
 2. Close and secure all doors and windows.
- STEP 5:** EC contacts Savage Services Regional Management.
- STEP 6:** Personnel may need to take shelter in predetermined shelter area on site or a shelter nearby.

TORNADO WARNING ISSUED

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STEP 1: When a TORNADO WARNING is issued, a tornado has been sighted in the area and or is indicated by radar.

STEP 2: The EC will sound appropriate warning and personnel will take shelter onsite immediately.

1. If inside, stay in an interior area that is secure until the storm has passed.
2. If outside, get to a basement, a sturdy building, or lie in a ditch or low-lying area.
3. If in a vehicle or mobile trailer, get out and go to safety.
4. Listen to the weather station to obtain updated information.

AFTER A TORNADO

STEP 1: Conduct a roll call.

STEP 2: Check all damaged areas for injured people.

STEP 3: Take steps to mitigate further damage and make emergency repairs.

STEP 5 After storm has passed and it is safe to do so, complete a report describing property and equipment damage, customer product damage or possible contaminations, theft of Savage Services equipment or other loss and damages. Document all damage with photographs and descriptions.

2.6

Medical Emergencies

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Fire Department: 911
Police Department: 911
Ambulance: 911
Hospital (661)327- 4647

- STEP 1:** Notify Emergency Coordinator via radio or in person.
- STEP 2:** Emergency Coordinator sounds appropriate Emergency Code throughout the terminal.
 ➤ *CODE: GREEN*
- STEP 3:** EC sends TRAINED Terminal First Aid/CPR personnel to assess and assist injured.
- STEP 4:** The personnel assisting injured communicates to EC on the condition and need for outside assistance.
- STEP 5:** EC notifies outside assistance, if necessary OR injured is transported to nearest medical facility if injury is not serious.
- STEP 7:** EC notifies family or employee's company.
- STEP 8:** EC contacts Savage Services Regional Management.
- STEP 9:** EC completes initial injury/accident report and begins investigations as per operating company / Savage Services incident investigation process before resuming operation or use of equipment involved in the injury.

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2.7

Security Breach / Break-Ins



Fire Department: 911
Police Department: 911
Ambulance: 911

AFTER HOURS SECURITY INCIDENT

- STEP 1:** A security breach has occurred. Security contacts the terminal operation Manager. The person of contact goes to the Terminal Entrance to await police.
- STEP 2:** After police arrive personnel wait outside terminal until clear.
- STEP 3:** If police do not arrive, call police from pay phone outside of the terminal or from a cellular phone.

DO NOT GO INTO THE TERMINAL UNLESS IT HAS BEEN CLEARD BY THE POLICE

- STEP 4:** Once the police have cleared the terminal:
 - Secure the area
 - Reset the alarm (if applicable)
 - Call Security Contract company (if applicable)
- STEP 5:** Complete a report describing security breach to include property and equipment damage, customer product damage or possible contaminations, theft of Savage Services equipment or other loss and damages.

SUSPICIOUS ACTIVITY DURING BUSINESS HOURS

- STEP 1:** Ask the person to identify themselves and their purpose IF SAFE TO DO SO. If you sense confronting a stranger might do you harm, contact local police.
- STEP 2:** After police arrival- meet with police to provide details of the activity, where and when the activity took place and a description of person(s).
- STEP 3:** Contact UP Police Communications Center to report the incident.

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2.8 Bomb and / or Terrorism Threats



Fire Department: 911
 Police Department: 911
 Ambulance: 911

STEP 1: Terminal receives a-bomb or terrorist threat via telephone, fax, or letter.

ALL THREATS MUST BE CONSIDERED AS CREDIBLE THREATS

Be calm and courteous. Listen very carefully and do not interrupt the caller. If possible, alert other office personnel to call local authorities on another line.

Try to get the EXACT wording of the threat. Make notes of the following:

- a. Caller age estimate (adult or child)
- b. Caller sex (male or female)
- c. If an organization is mentioned
- d. Bomb facts:
 - i. When will bomb detonate?
 - ii. Where is bomb located?
 - iii. What does bomb look like
 - iv. What kind of bomb
 - v. Does caller seem familiar with the terminal locations or products?
- e. Voice characteristics (loud, fast, nasal, raspy)
- f. Any accent (local, foreign)
- g. Speech (fast, slow, incoherent, slurred)
- h. Background noise (voices, music, animals, party, street traffic, airplanes)

STEP 2: EC notifies local police of the threat.

STEP 3: EC sounds the appropriate Emergency Code throughout the terminal and contacts the neighboring businesses to advice of emergency.

STEP 4: The facility EC will brief arriving police of the threat that was received and provide as many details as possible. Make notes if possible. Assist law enforcement official with information on the facility, products, and resources. Provide any of the above call details you can remember or your notes.

DO NOT GO INTO THE TERMINAL UNLESS IT HAS BEEN CLEARD BY THE POLICE

STEP 5: Monitor situation in case threat was real and/or escalates.

STEP 6: Make notifications to Savage Regional management.

STEP 7: Once the police have cleared the terminal:

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- Brief all employees on the incident and safe terminal status
- Inspect any partial transfers for safe restart

- Resume normal terminal operations

STEP 8: Complete a report describing threat to include property and equipment damage, customer product damage or possible contaminations, theft of Savage Services equipment or other loss and damages.

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2.8 Earthquakes



Fire Department: 911



Police Department: 911



Ambulance: 911

Step 1: What to do when the Shaking Begins:

- A. **DROP, COVER AND HOLD ON!** Drop under a sturdy desk or table, hold on firmly and protect your eyes by pressing your face against your arm. Be prepared to move with desk or table until the shaking stops.
- B. If there's no table or desk nearby, sit on the floor against an interior wall away from windows, bookcases, or tall furniture that could fall on you.
- C. If you are outdoors, find a clear spot away from buildings, trees, and power lines. Drop to the ground.
- D. If you are in a car, slow down and drive to a clear place (as described in C.). Stay in the car until the shaking stops.

Step 2: What to do when the Shaking Stops

- A. Check yourself for injuries. Protect yourself from further danger by putting on (if available) long pants, a long sleeved shirt, sturdy shoes, and work gloves.
- B. Check others for injuries. Give first aid for serious injuries.
- C. Look for and extinguish small fires. Eliminate fire hazards. Turn off the gas if you smell gas or think it's leaking. (Remember only a professional should turn it back on.)
- D. Listen to the radio for instructions.
- E. Expect aftershocks. Each time you feel one, **DROP, COVER, AND HOLD ON!**
- F. Inspect the area for damage. If your building is unsafe, get everyone out.

Use the telephone only to report life-threatening emergencies.

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Section III: Post Incident Activity

3.1 Incident Documentation

Required Reports - Written Notification

Within 24 hours of the incident, the Emergency Coordinator shall submit a written summary of the incident to Savage Services management. A complete report and root cause will be distributed internally with-in ten (10) days after an incident necessitating implementation of the contingency plan.

Written reports will be filed to State and Federal government agencies as required. The required reports for this site are to be made to:

Regional Operations Manager
Director of Health Safety and Environmental

Copies of the report will be maintained with the facility operating record. The report shall include:

- A. Name, Address and Telephone number of the terminal operator.
- B. Name, Address, and Telephone number of the facility
- C. Date, Time and Type of incident (for example; fire, spill, explosion, etc.)
- D. Name and quantity of materials involved
- E. Extent of injuries, if any
- F. An assessment of actual or potential hazards to human health or the environment, where applicable
- G. Estimated quantity and disposition of recovered material that resulted from the incident
- H. A report of all notifications that were made including who was called, time of calls, and any other information obtained or derived from the notification calls

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3.2 RESPONSE CRITIQUE AND PLAN REVIEW AND MODIFICATION PROCESS

After all response and mitigation activities have been completed, the terminal and associated owner/operator management should complete an incident response critique to identify elements of the response system that fails was ineffective or worked well.

Key baseline rules for any critique:

1. To be effective as learning tools critiques must be honest.
2. A clear review of the facts leading to the incident must be established.
3. A step-by-step review of response actions or timeline should be established.
4. Critical control points such as incident discovery, reporting, communication/notification and response activities need to identified and measured for timeliness, completeness, and effectiveness.
5. Critical control points that were not effective should be flagged for review and modification as necessary.
6. Corrective action plans and responsibility for implementing corrective action are established and tracked until completed.
7. Applicability to other terminals or facilities should be identified and implement.
8. All participant interaction must be done to find ways to make improvements, not to find fault or blame those persons who performed incident management roles.

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Section IV: Appendices

4.1 Emergency Equipment

Emergency Equipment

The following is a list of emergency equipment maintained by this facility. Locations of equipment are noted. A site plan located in Figure 2. identifies all major buildings at the facility. Any response equipment that is utilized in an emergency must be replenished as quickly as possible.

A. Personal Protective Equipment

The maximum level of personal protective clothing employees are trained to use is EPA and OSHA Level C (as per 1910.120 HAZWOPER regulations).

The personal protective equipment used at this facility is:

- a. Safety Glasses
- b. Chemical protective clothing (compatible with products handled in the terminal)
- c. Hard Hats
- d. Goggles and Face shields
- e. Hearing protection
- f. Chemical resistant gloves
- g. Steel toed boots

B. Facility Spill and Response Materials

1. Material Safety Data Sheet Book(s) (Located inside controlroom and inside shop)
2. Chemical Inventory list (Located inside controlroom and inside shop)

C. First Aid Kit(s)

To provide care for sick or injured personnel prior to transportation for treatment (if required). First Aid Kit(s) can be found in the Office of the facility, shop office and inside controlroom.

Non-sparking synthetic brush brooms

If cleaning up loose absorbents used on small spills.

D. Non sparking (plastic) grain /scoop shovel

For clean up of loose absorbents used for small spills.

E. Oil Sorb To absorb spills. Oil sorb is located in:

1. 85 Gallon over pack drums at several accessible locations in the terminal
2. Inside Garage/Shed area

F. Absorbent Pillows/Socks/Dikes/Sheets

To create temporary dikes to retain and absorb any liquid commodity. Absorbent Pillows/Sock/Dikes are located:

1. Inside Over pack Drums at several accessible locations in the terminal
2. Inside garage/shed area

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NOTE: Any drums used to contain or clean up spilled hazardous materials must be properly labeled with DOT warning label, product name, UN number, date placed into container and fully sealed.

- G. Fire Extinguishers (Dry Chemical) To provide protection against Class A, B, and C fires. Fire extinguishers are located:

Fixed Locations

1. Shop – various locations
2. Controlroom
3. Office- various locations
4. Truckers restroom
5. Various locations around terminal

All portable transfer equipment is equipped with portable fire extinguishers.

- H. Assigned Duties:

- 1) Verl Penrod (Lead Safety Specialist) – Person-in-charge
- 2) Sergio Perez (Lead Safety Specialist) – Sprinkler control valve operator
- 3) Edgar Horn (Lead Safety Specialist) – Shut down fuel and electrical supplies to affected area
- 4) Freddy Cavazos (Lead Safety Specialist) – Call fire department
- 5) All personnel trained in the use of a fire extinguisher
- 6) Bob Farler (Safety Specialist) – Small hose and salvage techniques.

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4.2 Training Outline

All employees of SAVAGE SERVICES, who operate the Transloading facilities, are trained according to the policies outlined below:

1. OSHA 1910.1200 Hazard Communication: Awareness:

1. What constitutes a hazardous commodity?
2. What hazardous materials are handled at this terminal?
3. How are each of these transferred?
4. How is hazardous waste handled and disposed of?
5. Which chemicals/commodities are present at the terminal?
6. How are materials identified by the placard?
7. What are the hazards of the materials located at this facility?
8. How to read a MSDS (Material Safety Data Sheet)

OSHA 1910.38 Emergency Action Plan:

1. Emergency Coordinators
2. Implementation
3. Emergency Response Procedures
4. Emergency Equipment
5. Coordination Agreements
Evacuation Plan
6. Storage/treatment of spilled materials
7. Incompatible Wastes
8. General Alarms
9. Fire and Response Drills

OSHA 1910.57 Fire Extinguishers:

1. Annual fire extinguisher training

OSHA 1910.120 Hazardous Waste Operations and Emergency Response:

1. Terminal employees are trained to the First Responder-Operations level only.
2. First Aid and CPR

RECORD KEEPING:

1. All training records must be kept on file and retained. Both in the terminal records, and in the individuals training records.

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4.3 Definitions

Communications Clerk (CC):

That person designated to make notifications, manage communications with outside resources and agencies and to document response activities and notifications during an emergency.

Emergency Coordinator (EC):

That person designated to act in the event of an emergency to bring events under control, and to notify or cause to be notified the proper authorities. The Emergency Coordinator is empowered to commit all resources that are needed, including commitment of funds for outside help. The EC may also be referred to as the Incident Commander until relieved by outside response agencies or qualified persons in their chain of command.

Emergency Operations Center (EOC):

A location identified pre-emergency to serve as a communications, command, and control point during the emergency. This is the location where the EC and Communication clerk will management incident from and where outside responders and resources will stage during the emergency.

General Alarm:

A code spoken over the paging or terminal radio communication system, recognized by all personnel, to mean general alarm requiring immediate response. A General Alarm for this facility is;

COLOR CODE	DEFINITION	REQUIRED ACTION
RED	Immediately Evacuate	Shut down all equipment, all personnel assemble at the exit(s)
YELLOW	Spill Response	Every available trained person respond to the given location of the incident
BLUE	Fire	Telephone 911
GREEN	Personal Injury	Closest person respond to the given incident location, contact the Manager
CLEAR	All Clear	Incident has ended, return back to normal work

Regional Operations Manager:

An employee of SAVAGE SERVICES who oversees the operations of the various terminals in a given geographic area or region.

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4.4 First Responder

Name: _____

Date/Time: _____

Telephone Numbers:

Physical Location:

Type of Incident: Accidental Release, Fire, or Explosion

Name/Quantity of Material Released:

Potential Health/Environmental Hazards:

Injuries, (Number, and type) if any:

Reporting Log:



Local Fire/Rescue/Police Notification:

Spill Hotline Report:

Savage Regional Operations Manager:

Savage Regional Office:

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	<p style="text-align: center;">SAVAGE – REFINERY SOLUTIONS GROUP INJURY & ILLNESS PREVENTION PROGRAM</p> <p style="text-align: center;">HEAT STRESS PREVENTION</p>	<p>Policy Number: 2-29</p>
<p>Developed by: Official Safety Solutions</p>	<p>Reviewed By: </p>	<p>Date Reviewed: Date Revised:</p>

1.0 POLICY

The purpose of this policy is for Savage to maintain compliance with applicable OSHA standards and requirements regarding heat stress.

2.0 PURPOSE AND SCOPE

Operations where high air temperatures, radiant heat sources, high humidity, direct physical contact with hot objects, or strenuous physical activities are present have a high potential for heat stress. Outdoor operations conducted in hot weather, especially those that require semi-permeable or impermeable protective clothing be worn are also likely to cause heat stress among exposed workers.

Age, weight, degree of physical fitness, degree of acclimatization, metabolism, use of alcohol or drugs, and a variety of medical conditions affect a person's sensitivity to heat. Prior heat injury predisposes an individual to additional injury. Environmental factors include more than the ambient air temperature; radiant heat, air movement, conduction, and relative humidity are all factors.

The continued success in preventing heat related injuries and illnesses relies heavily on management, supervisors, and personnel working together to utilize their knowledge and experience in applying these guidelines.

3.0 REFERENCES



3.1 29 CFR 1910; Heat Stress.

4.0 ATTACHMENTS

4.1 Attachment 1: Summary of Heat Related Disorders, Symptoms, and Treatments.



4.2 Attachment 2: JHA Form

4.3 Attachment 3: Test

	<p style="text-align: center;">SAVAGE – REFINERY SOLUTIONS GROUP INJURY & ILLNESS PREVENTION PROGRAM</p> <p style="text-align: center;">HEAT STRESS PREVENTION</p>	<p>Policy Number: 2-29</p>
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5.0 DEFINITIONS

- 5.1 **Conduction.** Transfer of heat from particles that are touching each other in a stationary situation such as in the transfer of heat from the skin to air. The air temperature must be cooler than skin temperature for this to occur.
- 5.2 **Convection.** Circulation of that air next to the skin, which results in an increased cooling action.
- 5.3 **Evaporation.** Cooling of the body that takes place when sweat evaporates on skin surface.
- 5.4 **Globe Temperature.** Temperature inside a blackened, hollow, thin copper globe.
- 5.5 **Heat.** Measure of energy in terms of quantity (degrees).
- 5.6 **Heat Cramps.**
- 5.6.1 Heat cramps commonly result from performing hard physical work in a hot environment. These cramps are attributable to the continued loss of salt that occurs with sweating. Cramps often occur in the muscles used during work and can be alleviated readily by resting and drinking water.
- 5.6.2 Salt tablets should not be used for this purpose because they tend to cause retention of both salt and water in the digestive system, which deprives the rest of the body of water and electrolytes.
- 5.6.3 A commercial replenishing fluid, e.g., Gatorade®, may be taken frequently, if medically recommended. Addition of salt in food should be done with care for those suffering from cardiovascular disorders.
- 5.7 **Heat Disorders and Health Effects.** Refer to Attachment 1 – Summary of Heat Related Disorders, Symptoms and Treatments.

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5.8 Heat Exhaustion.



- 5.8.1 The symptoms are headache, nausea, dizziness, weakness, thirst, and giddiness. Fortunately, this condition responds readily to prompt treatment.
- 5.8.2 Heat exhaustion should not be dismissed lightly for several reasons. One is that the fainting associated with heat exhaustion can be dangerous because the victim may be operating machinery or controlling an operation that should not be left unattended; moreover, the victim may be injured when he/she faints. Also, the symptoms seen in heat exhaustion are similar to heat stroke, which is a medical emergency.
- 5.8.3 Workers suffering from heat exhaustion should be removed from the source of heat and provided fluid and salt replacement along with adequate rest.

5.9 Heat Fatigue.

- 5.9.1 A factor of heat fatigue includes the lack of acclimatization.
- 5.9.2 Symptoms include impaired performance of sensor motor skills. No specific recommendations for treatment unless accompanied by other heat illness. The use of a program of acclimatization and training for work in hot environments is advisable.

5.10 Heat Rashes.

- 5.10.1 Heat rashes are the most common problem in the work environment. Prickly heat appears as red papules, usually in areas where the clothing is restrictive and gives rise to a prickling sensation, particularly as sweating increases. Prickly heat occurs in skin that is persistently wetted by un-evaporated sweat, and heat rash papules may become infected if they are not treated.
- 5.10.2 In most cases, all heat rashes disappear when the affected individual returns to a cool environment.

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5.11 **Heat Stress.** The American Conference of Governmental Industrial Hygienists defines heat stress as "the total net heat load on the body" that results from exposure to external sources and from internal metabolic heat production.

5.12 **Heat Stroke.**

5.12.1 Heat stroke occurs when the body's system of temperature regulation fails and the body's temperature rises to critical levels. It is caused by a combination of highly variable factors and is difficult to predict.



5.12.2 The primary symptoms are confusion; irrational behavior, loss of consciousness, convulsions, a lack of sweating (usually), hot, dry skin; and an abnormally high body temperature (105.8 degree F). If the body temperature rises too high, death will follow. The elevated metabolic temperatures caused by a combination of workload and environmental heat load, both of which contribute to heat stroke, are highly variable and difficult to predict.

- Place the victim in a shady area, remove outer clothing, wet the skin, and increase air movement to improve evaporative cooling until professional methods of cooling are initiated and the seriousness of the condition can be assessed. Fluids should be replaced as soon as possible. The medical outcome of an episode of heat stroke depends on the victim's physical fitness and the extent of first aid treatment.

5.12.3 Regardless of the worker's protestations, no employee suspected of being ill from heat stroke should be sent home or left unattended unless a physical has specifically approved such an order.

5.13 **Metabolic Heat.** By-product of the body's activity.

5.14 **Radiation.** Transfer of heat energy through space. For example, the heat from a boiler or from the sun will transfer to (or heat) objects in their surrounding areas.

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6.0 RESPONSIBILITIES

6.1 Safety Support Team

- 6.1.1 The Safety Support Team will prepare and maintain a company-wide safety policy.
- 6.1.2 Provide assistance to the various locations, as requested, in the implementation of this policy.
- 6.1.3 Conduct regularly scheduled reviews of the policy to ensure compliance with the S7 operating system and any applicable regulatory agencies.



6.2 Operations Managers and Supervisors

- 6.2.1 Operations Managers and Supervisors are responsible for assuring the overall implementation of and compliance with the Company's Heat Stress IIPP.

6.3 Lead Safety Specialist and Safety Specialist

It is the responsibility of each Lead Safety Specialist and Safety Specialists to assist the management to:

- 6.3.1 Continuously monitor the work to assure compliance with this IIPP.
- 6.3.2 Confirm each job has been properly evaluated for hazards and that these hazards have been properly eliminated or controlled.

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6.3.3 Ensure employees are aware of any hazards associated with their work.

6.3.4 Ensure employees have received proper training.

6.3.5 Ensure employees adhere to all requirements of this IIPP.

6.4 Employees

Employees performing work tasks covered by this procedure must:

6.4.1 Be knowledgeable of the any hazards or requirements associated with their work.

6.4.2 Wear the appropriate equipment according to training received and knows the uses, limitations and care of this equipment.

6.4.3 Inspect equipment prior to each use and remove any defective equipment from service.



6.4.4 Maintain assigned equipment in a clean and operable condition, and store/dispose of it according to training received.

6.4.5 Report any problems or questions to Supervision promptly.

7.0 GENERAL PROCEDURES

7.1 Applications.

7.1.1 This program applies to Savage employees and defines guidelines and recommendations regarding the prevention of heat stress related injuries and illnesses. This program applies to routine work, enclosed/confined space entry work, and work in

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semi-impermeable or impermeable personal protective clothing.

7.1.2 This program applies to work carried out in:

- Normal protective clothing (Nomex, flame retardant, etc.) Cotton along with hardhat, boots, and gloves at temperatures at or above 90 degrees F.
- Special protective clothing worn at temperatures at or above 80 degrees F (slicker suits, disposable coveralls, welding leathers, etc.)

7.1.3 When assessing exposure to heat, it is important to take into consideration both the ambient (environmental) temperature and the heat generated by the equipment and work.



7.2 Control Measures

7.2.1 General

- Modify work / rest schedules according to temperature and workload.
- Rotate personnel; alternate job functions to minimize over-stress or overexertion at one task.
- Add additional personnel to work teams.
- Ventilation, air cooling, fans, shielding, and insulation is the five major types of engineering controls used to reduce heat stress in hot work environments.
- Reduce the physical demands of work such as excessive lifting or digging with heavy objects.
- Limit worker occupancy, or numbers of workers present, especially in confined or enclosed spaces.
- Complete Site-specific Safety & Health Program (Refer to Attachment 2) for all job sites.

7.2.2 Acclimatization

- The human body can adapt to heat exposure up to a point.



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This physiological adaptation is called acclimatization. After acclimatization, the same activity will produce lower level cardiovascular demands. The worker will sweat more efficiently (causing better evaporative cooling), may lose less salt, and thus will more easily maintain normal body temperatures.

- A properly designed and applied acclimatization program decreases the risk of heat-related illnesses and unsafe acts. Such a program basically involves exposing employees to work in a hot environment for progressively longer periods. NIOSH says that, for workers who have had previous experience in jobs where heat levels are high enough to produce heat stress, the regimen should be 50% exposure on day 1, 60% exposure on day 2, 80% exposure on day 3 and 100% exposure on day 4. For new workers who will be similarly exposed, the regimen should be 20% on day 1, with a 20% increase in exposure each additional day.
- Some heat acclimatization can be lost when individuals are removed from hot environments for periods as short as two weeks. Within three weeks to a month, acclimatization effects are lost, and hardly any traces are found after a few months. In such instances, it may be necessary to reacclimatize these individuals upon return to work. One method of re-acclimating personnel involves adjusting workload. Some examples of workload include:
 - ✓ Shifting heavier work to cooler parts of the day.
 - ✓ Rotating work assignments among crews.

7.2.3 Fluid Replacement

- Ample supplies of liquids should be placed close to the work area. Cool (50-60 degree F) water or any cool liquid (alcoholic beverages excluded) should be made available to workers in such a way that they are stimulated to frequently drink small amounts, e.g., one cup every 20 minutes. Although some commercial replacement drinks contain salt, it is not necessary for acclimatized individuals, because these people generally add enough salt in their

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summer diets. Unacclimatized individuals may need salted drinking water in a concentration of 0.1%.

- Start drinking water before the beginning of the work period. Thirst is not an adequate stimulus to maintain the proper amount of fluid in the body. (If you get thirsty, it's taken too long).
- Water is the first choice for rehydrating. Drinks containing electrolytes such as Gatorade, Squincher, etc., can be used, providing they are not the sole source of fluid at the work site and the following information is supplied to personnel:

- ✓ Individuals with high blood pressure, diabetes, or on a low sodium diet should consult a physician before drinking electrolyte-containing drinks such as Gatorade and Squincher. All others may drink it in moderation.



7.3 Personal Protective Equipment (PPE)

7.3.1 Reflective Clothing

- Reflective clothing, which can vary from aprons and jackets to suits that completely enclose the worker from neck to feet, can stop the skin from absorbing radiant heat. However, since most reflective clothing does not allow air exchange through the garment, the reduction of radiant heat exposure must more than offsets the corresponding loss in evaporative cooling. For this reason, reflective clothing should be worn as loosely as possible and only when authorized by a safety professional.
- In extreme situations where radiant heat is high, auxiliary-cooling systems can be used under the reflective clothing.

7.3.2 Auxiliary Body Cooling

- Ice Vests
 - ✓ Commercially available ice vests, though heavy, may accommodate as many as 72 ice packets,

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which are usually filled with water. Carbon dioxide, dry ice, can also be used as a coolant.

- ✓ The cooling offered by ice packets lasts only two-four (or less) hours at moderate to heavy heat loads, making frequent replacement necessary. However, ice vests do not encumber the worker with air supply or power cords, permitting maximum mobility. Cooling with ice is also relatively inexpensive.

- **Wetted Clothing**



- ✓ Another simple and inexpensive personal cooling technique that is effective when reflective or other impermeable protective clothing is worn is the use of wetted terry cloth coveralls or wetted two-piece, whole-body cotton suits.
- ✓ This approach to auxiliary cooling can be quite effective under conditions of high temperatures and low humidity where evaporation from the wetted garment is not restricted.

- **Water-Cooled Garments**

- ✓ These garments range from a hood, which cools only the head, to vests and "long-johns", which offer partial or complete body cooling. This equipment requires a battery-driven circulating pump, liquid-ice coolant and a container.

7.3.3 Respirator Usage

- The use of the self contained breathing apparatus (SCBA) itself and its additional weight adds stress to the worker, and this stress will contribute to the overall heat stress of the worker.
- Chemical protective clothing such as the totally encapsulated chemical protection suits will also add to the

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heat stress problem.

- Frequent shifts of workers may be necessary.

7.4 Medical Surveillance Program



7.4.1 Savage utilizes the following medical surveillance procedures:

- Physical examination (Post Offer)
- Complete Blood Count (CBC) with differential
- Heavy Metals test
- Hearing conservation
- Pulmonary function test
- EKGs (employees 40 years of age or older)

7.5 Responsibilities

7.5.1 Individuals

- Personnel should understand the principals of heat stress prevention and manage their work accordingly. Recognize early warning signs both for yourself and co-workers, and take appropriate actions.
- Personnel should recognize and inform their supervisors when off-the-job activities could impact their ability to work in hot environments (sunburn, diarrhea, etc.).
- Keep your body fit. Fat layers act as insulators and slows the body's ability to remove heat. Your heart also works harder if you are carrying around extra weight. Eat well-balanced meals and get plenty of sleep.
- Follow these same heat stress prevention practices for off-the-job heat exposure such as lawn mowing and recreational activities.
- Certain drugs, including alcohol, can affect the ability of the body to tolerate heat. Alcoholic beverages increase body water loss, while other addictive drugs may reduce heat tolerance.

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- Wear the recommended type of clothing.

7.5.2 Supervisors

- Supervisors must consider the potential for heat stress associated with work in their areas. They should understand their role in heat stress management and the principals for preventing heat illness in their area of responsibility.
- Provide ample supply of drinking water as near to the work area as possible. The workers should be given frequent rest breaks in a cooler environment.
- Ensure personnel receive Heat Stress Prevention training. Provide periodic training (tailgate safety meetings) on the recognition and prevention of heat stress for day-to-day tasks.
- Allow employees to adequately acclimate themselves to the heat. Introduce new personnel, or personnel who have not been accustomed to wearing fire retardant or impermeable clothing, to heat exposure gradually.
- When practical, have employees work in the shade. Exposure to full sunshine can increase the heat index values by 15 degrees F. Providing an awning or tarp, umbrella, or other shade will reduce the radiant heat load.
- Provide shelter to protect personnel during rest periods.
- Consider performing the hardest work early in the morning and saving the lighter work for the warmer time of the day.
- For some activities, such as enclosed/confined space work, the use of conditioned air should be considered.

8.0 TRAINING

- 8.1 Training is the key to good work practices. If all employees do not understand the reasons for using new or changing old work practices, the chances of such a program succeeding are greatly reduced.
- 8.2 Savage will ensure that all employees covered in this Heat Stress Prevention Program are trained in the following factors:

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- Knowledge of the hazards of heat stress.
- Recognition of predisposing factors, danger signs, and symptoms.
- Awareness of first-aid procedures for and potential health effects of heat stroke.
- Employee responsibilities in avoiding heat stress.
- Dangers of the use of drugs, including therapeutic ones, and alcohol in hot work environment.
- Use of protective clothing and equipment.
- Purpose and coverage of environmental and medical surveillance programs and the advantages of worker participation in such a program.

9.0 INSPECTION AND STORAGE



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ATTACHMENT 1 SUMMARY OF HEAT RELATED DISORDERS, SYMPTOMS, AND TREATMENTS

DISORDER

SYMPTOMS

TREATMENT

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HEAT STROKE

(Least common, but most dangerous)
Occurs when body's system of temperature regulation fails and the body's temperature rises to critical levels. This disorder is associated with high fatality rates; so early recognition and treatment are critical.

- * Red or flushed skin
- * Confusion, irrational behavior
- * Lack of sweating, hot dry skin (although person may have been sweating earlier)
- * High body temperature
- * Dizziness, convulsions, nausea, vomiting, and headache can result
- * Loss of consciousness



- Emergencies: Call x _____**
- * If heat stroke suspected, call ambulance immediately
 - * Do not delay transportation to medical facility
 - * Move to cool environment and remove unnecessary clothing
 - * Sponge body with cool water and fan individual
 - * If patient is alert, give sips of cool water
 - * No one suspected of being ill from heat stroke should be sent home without medical evaluation

EAT EXHAUSTION

May occur after working in hot environments without adequate fluid replacement. Heat exhaustion may be confused with heat stroke, which is a medical emergency.

- * Weakness, fatigue
- * Headache, nausea, vomiting, and/or loss of appetite, thirst
- * Pale, clammy skin with large amount of sweating
- * Lightheadedness, fainting
- * Impaired performance

- Emergencies: Call x _____**
- * Call ambulance and move employee to cool environment
 - * Do not delay transportation to a medical facility
 - * Remove necessary clothing
 - * Person should lie flat
 - * If person is alert, offer small amounts of cool water

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HEAT CRAMPS

May occur after working in moderate to hot environments. This disorder usually occurs after hard physical work. Heat cramps may occur during or after work.

- * Cramps in skeletal muscles or abdominal muscles
- * Cramps may be recurrent
- * Muscle pain may continue after cramps subside



- * Move person to cool environment
- * Remove unnecessary clothing
- * Provide water or electrolyte solution
- * Transport to medical facility

HEAT RASH

Is the most common heat related disorder. Aggravated by restrictive or impermeable clothing.

- * Skin rash commonly occurs on the arms, shoulders, chest, and behind the knees
- * May be accompanied by a tingling or prickly feeling

- * Move to cool environment
- * Remove restrictive or impermeable clothing, if present
- * Avoid scratching
- * Seek medical attention
- * Shower and dry skin thoroughly after working in hot environments

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ATTACHMENT 2

HEAT STRESS PREVENTION PROGRAM TEST

NAME: _____ DATE: _____



1. _____ occurs when the body's system of temperature regulation fails and the body's temperature rises to critical levels. It is caused by a combination of highly variable factors, which are difficult to predict.
2. _____ are the most common heat related problem in the work environment.
3. Symptoms of _____ include headache, nausea, dizziness, weakness, thirst, and giddiness. Fortunately, this condition responds readily to prompt treatment.
4. _____ commonly result from performing hard physical work in a hot environment and are attributable to the continued loss of salt that occurs with sweating.
5. _____ is the first choice for re-hydrating.

True or False:

6. _____ This Heat Stress Prevention Program applies to work carried out in normal cotton, protective clothing, hardhat, boots, and gloves at temperatures at or above 90 deg. F.
7. _____ This Heat Stress Prevention Program applies to work carried out in special protective clothing worn at temperatures at or above 80 deg. F.
8. _____ Age, weight, degree of physical fitness, degree of acclimatization, metabolism, use of alcohol or drugs, and a variety of medical conditions affect a person's sensitivity to heat.
9. _____ Prior heat injury is not an indication of additional heat related problems.
10. _____ Very cold (35-45 deg F) water should be placed close to the work area.

TRAINER NAME: _____

TRAINER SIGNATURE: _____

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ATTACHMENT 3
SEE JHA FORM

Response Attachment A253:

Hotspots Analysis and Reporting Program (HARP) Files

Note: HARP model files are provided separately on CD