Núm. de Radicación:
01PU2-CET00-05114

Número de Catastro:
71-441-000-000-08-000

ESTADO LIBRE ASOCIADO DE PUERTO RICO
ADMINISTRACION DE REGLAMENTOS Y PERMISOS
CENTRO EXPRESO DE TRAMITE

132908

PERMISO DE USO

EDIFICIO DE ADMINISTRACION - PLANTA DE ENERGIA TOTAL

De conformidad con las disposiciones legales y reglamentarias, se expide el presente Permiso de Uso - Certificado / Industrial / Privado para la dirección que ubica en :

CARR PR-3, KM 142.0
BO. JOBOS
GUAYAMA, PR, 00785

Dueño(s)
1. David Stone (Primario)
AES-PUERTO RICO L.P.

Proponente / Contacto(s)
1 Proyectista - Ing. Julio Sánchez Rodríguez

Zonificación
Zonificación 1 : IL-2
% Topografía semi-llana : 100%
Cabida Escritura m² : 88.6138 Cuerdas
Cabida Mesura m² : 87.69987 Y 0.9108 cuerdas
Fecha de Vigencia (Inund) : 06/01/99
Fecha de Vigencia (Zonif) : 05/05/71

Atributos

------ Final de Atributos ------

Este permiso debe cumplir con las siguientes condiciones generales:

Este permiso no legaliza obras construidas sin permiso de esta oficina ni impide cualquier acción legal tomándose o a tomarse contra las mismas. El cumplir con los requerimientos de la Administración de Reglamentos y Permisos no exime a cualquier parte que solicite un permiso o autorización de la ARPE de cumplir con los requisitos establecidos por las leyes federales "Fair Housing Act" y "Americans With Disabilities Act". Entendiendose que este permiso no releva al peticionario de cumplir con los requerimientos del Departamento de Salud. Se cumplira con los requisitos del Cuerpo de Bomberos de Puerto Rico.

Esta actividad será operada en forma ordenada. La instalación de rótulos para este uso requiere permiso de esta oficina. Este permiso deberá estar expuesto en todo momento en un lugar visible al público dentro de las facilidades del establecimiento para el cual fue otorgado. Deberá cumplir con todas las disposiciones de la Junta de Calidad Ambiental y la Ley Sobre Política Pública Ambiental para este tipo de uso. Será responsabilidad del concesionario de este permiso el proveer los espacios de estacionamientos funcionales requeridos. El no operar o el intensificar el Uso Autorizado conlleva la Revocación Sumaria del mismo.

Número de Permiso de Construcción Aprobado : 00CX2-00000-03280

El(La) Contratista/Constructor **GEORGE RABB**, mediante el affidavit número **3283** del **7 de noviembre de 2001**, juramentada ante el Notario **LCDA LIVIA E ROVIRA**, ha certificado que la obra fue ejecutada de acuerdo a los planos y especificaciones del permiso de construcción aprobado y expedido.

Ing. Angel D. Rodriguez Quiñones
ADMINISTRADOR DE ARPE

Autorizado por : Ing. Antonio Lozada Dominguez
Gerente
CENTRO EXPRESO DE TRAMITE

Fecha de Aprobación : **11-27-2001**

Fecha Expedido :

Este documento no es válido sin el sello

Facility Description and Operations

AES Puerto Rico Cogeneration Plant (AESPR) is a cogeneration power plant that produces approximately 454 MW of net electricity which is sold to the Puerto Rico Electric Power Authority (PREPA). In addition, the facility commercially produces approximately 290,000 pounds per hour of pressurized steam for industrial processes of industrial clients in the area. Copy of the EQB Resolution R-96-9-1 dated March 4, 1996 approving the AESPR facility Environmental Impact Statement, Planning Board Resolution approving the site consultation number 94-71-1099-JPU, and Use Permit 132908 dated November 27, 2001 issued by the Permits and Regulations Administration are included.

The main process emission units consist of two bituminous coal-fired circulating fluidized bed boilers (CFB) with cyclones (EU-1 and EU-2), which supply superheated steam to two extraction/condensing turbines to drive electric generators. The two boilers have a combined maximum heat input rate of 4,922.7 MMBtu/hr. The emissions are controlled through the use of the CFB boilers (CD-1-1 & CD-2-1) and Circulating Dry Scrubber (CD-1-3 & CD-2-3) designs with limestone and lime injection, respectively for SO_x control, a dry electrostatic precipitator (CD-1-4 & CD-2-4) for PM control, and a selective non-catalytic reduction system (SNCR) using urea (CD-1-2 & CD-2-2) for additional NO_x control. The boilers also use low sulfur coal (1% wt or less). No. 2 oil will be used as startup fuel. The CFB boilers have two individual stacks with Continuous Emissions Monitoring System (CEMS) for NO_x, SO_x and CO and Continuous Opacity Emissions Monitoring System (COMS). AESPR employs Best Available Control Technology (BACT) to control emissions from the plant.

The steam produced in the CFB boilers is transferred to the turbine to produce electricity. The steam is condensed using cooling water that is recirculated through a wet cooling tower (EU-4), that use drift eliminators (CD-4-1) to reduce drift of the circulating water flow. The plant has a coal storage area (EU-12), two coal crushers (EU-13), eight coal silos (EU-14), two lime silos and piping (EU-18). The coal (EU-10C) and limestone (EU-10L) are transferred by conveyors from the AESPR dock area to the main plant, and within the facility. The facility has emergency and startup equipment consisting of one fire water pump (EU-8) using diesel, one diesel fueled emergency generator (EU-7), and a diesel fueled boiler feed water pump (EU-9) and respective diesel storage tanks (EU-8-1, EU-7-1 & EU-9-1). The plant has an aggregate manufacturing process (EU-20) and handling equipment, and dry ash silos (EU-19).

Fugitive emissions are mainly generated from the coal, limestone and aggregate handling system and fuel storage tanks. Materials handling fugitive emissions are controlled using enclosed conveyors, dust collectors and dust suppression systems using water sprays.

AESPR air emissions are regulated by the Environmental Quality Board (EQB) in accordance with the EQB-issued air permit number PFE-TV-4911-30-0703-1130 dated November 15, 2011 (EQB Air Permit). Stormwater runoff is regulated by the requirements of the United States Environmental Protection Agency's (EPA) Stormwater Multi-Sector General Permit No. PRR05BL65 (Stormwater Permit), as well as under the terms and conditions of Administrative

Order on Consent, Docket No. CWA-02-2015-3102 (March 2015) entered into by AESPR and EPA Region 2.

The coal combustion residues (CCR) produced in the AESPR plant are recovered and processed within the same AESPR plant in a continuous manufacturing procedure to manufacture two main products. These products are Dry Ash and a manufactured aggregate, commercially known as Agremax™. Dry Ash, which is produced in AESPR by mixing Fly Ash and Bottom Ash in silos, is beneficially used by sanitary landfill systems in Puerto Rico to solidify non-hazardous liquid waste and Agremax™, which is manufactured in AESPR by hydrating, curing, compacting and scarifying Dry Ash, is mainly beneficially used in the construction industry as a structural and subgrade road filler. Agremax™ is also very useful as a daily cover material in sanitary landfill systems. Currently, AESPR is supplying CCR/Agremax for use as daily cover in EC Waste Humacao and Peñuelas landfills, and will supply CCR/Agremax to Ecosystems, Inc. for beneficial use at the new Ecosystems Landfill located in Peñuelas once it is authorized by EQB to operate in accordance with applicable laws and regulations.

AESPR does not dispose of CCR. AESPR only processes its own CCR to manufacture Dry Ash and Agremax™. AESPR does not receive CCR from external sources to be processed within its facility. Moreover, AESPR reaffirms that the CCR produced by AESPR that is beneficially used is not a solid waste, and that AESPR it is not a solid waste facility subject to Rule 642 of the Solid Waste Regulation.

Title:

Coal Combustion Residuals and Agremax Dust Control Plan

Approvals:

	Signature	Date
Prepared by: Winston R. Esteves		
Reviewed by: Carlos M. Gonzalez		
Environmental Coordinator		
Ramiro Rivera Maintenance Manager		
Elias Sostre Operations Manager		
Manuel Mata President		

Distribution List:

1. CCP Area
2. Material Handling
3. Environmental Coordinator
4. Operations & Maintenance Area
5. Plant Manager

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Appendices

Appendix 1 Dust Control Maps
Appendix 2 Dust Control Activity Flowchart
Appendix 3 Dust Control Inspection Checklist
Appendix 4 Dust Control Training Syllabus
Appendix 5 Employee Training Attendance Form

1. Purpose

This Standard Operating Procedure (SOP) identifies methods to prevent, reduce or mitigate fugitive dust from the coal combustion residuals and Agremax™ handling activities at the AES-PR site.

The primary purpose of this SOP is to explain how the requirements in Section 2.1.2.12 of the US Environmental Protection Agency's (EPA) 2008 Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity (MSGP) - Dust Generation and Vehicle Tracking of Industrial Materials will be implemented and monitored at AES-PR.

2. Scope

The Plan described in this SOP only addresses dust emissions (including fugitive dust) from coal combustion residuals (ash) and Agremax™ handling equipment and operations which are non-point sources and area sources within the AES-PR property boundaries as shown in Appendix 1. It does not address particulate or gaseous emissions from point or other sources regulated under the facility's air emission permit.

It identifies sources of fugitive dust, outlines the techniques and practices for detecting, monitoring, controlling, minimizing and preventing dust emissions, provides employee training program guidelines to help them recognize potential sources of dust and the management practices to prevent and control them, identifies the persons and procedures responsible for control equipment availability / operation and maintenance and identifies the recordkeeping practices that will be followed.

3. Responsibilities

3.1. The Coal Combustion Products (CCP) and Material Handling (MH) leaders are the dust control site coordinators responsible for the implementation of this SOP, including: reading and understanding it, ensuring that all employees / workers / subcontractors know and understand their

dust control responsibilities, monitoring the worksite for compliance with the requirements of this SOP, designing watering schedules, ensuring that adequate watering capability is available, determining when to use standby controls when primary controls are ineffective, determining when to cease and start operations, maintaining records and revising the SOP as necessary, including when the primary and standby or contingency controls don't result in effective control.

3.2. The Shift Team Leaders and the CCP/MH Operators are responsible for controlling their operational areas to minimize dust generation. This includes limiting or stopping operations during high winds and/or visible dust plume conditions that cannot be controlled.

3.3. The CPH/MH Operators are responsible for enforcing the requirements of this SOP and notifying the dust control site coordinator or Shift Team Leader of any visible dust plumes which require immediate attention, including those that cross the site boundary. The operational activity that caused the emission will be ceased temporarily until a re-evaluation of the dust control measures is completed and additional controls are identified and implemented, if needed.

3.4. All dust control equipment i.e., water truck, sweeper, sprinklers, hoses, will be maintained in good operational order by the responsible areas. The water truck will be the responsibility of MH, the sweeper by CCP; all other controls will be the responsibility of the Maintenance Area. Each area will document and maintain records of how frequently equipment maintenance is done and of all equipment malfunctions and downtimes.

4. Safety Precautions

All AES-PR employees and contractors must use the required safety and personal protective equipment required for conducting the activities described herein, including but not limited to hard hats, safety glasses, harness, life preservers and other as appropriate.

5. Dust Emission Sources

The dust emission sources covered by this SOP are located at the southeast quadrant of the plant site and the marine dock. See Appendix 1

Fly ash and bottom ash is generated from the coal combustion process and stored in two elevated silos. The dry ash is transferred from the silos into bulk trailers for transport by public highway to off-site users.

Agremax, a manufactured aggregate also generated from the coal combustion process, is mixed in a pug mill that feeds a conveyor belt used to transfer the mixture to an open stockpile area. The stockpile is formed by a bulldozer or by dump trucks that are loaded by an excavator or front end loader, the trucks then dump onto the top of the stockpile. From the stockpile area the Agremax is loaded by an excavator or front-end loader into dump trucks for transport by public highway to off-site users. Alternatively, the Agremax can be fed by a bulldozer into a crusher located in the stockpile area. The crusher feeds a conveyor that transfers the Agremax to marine vessels in the dock area for shipment overseas. Dust can be generated from the ash-Agremax transfer operations, truck loading and unloading, crusher loading, from paved and unpaved haul roads within the site, and from the stockpile.

Most of the dust emissions from AES-PR are generated by wind erosion. The prevailing winds at the site blow from the north-northeast and south-southeast 90 % of the time at speeds of 4.5 to 18 miles per hour 95% of the time.

6. Controls

The main equipment and structures used for controlling dust emissions include a water truck with rear spray nozzles and front water cannon, a broom sweeper, mobile water sprinkler guns, large water hoses, fixed water spray nozzle systems / articulated telescoping spouts at drop and loading / shipping areas, a truck wheel cleaning station and curved-paved haul roads.

In addition to the use of the equipment and structures described above, primary (first approach) and contingency (standby or backup strategy) control measures are used to control the generation of dust emissions. Refer to the flowchart in Appendix 2.

Primary controls include initial and annual personnel training, a daily operational inspection checklist to monitor the implementation and effectiveness of the control measures, daily evaluation of weather forecast and real-time instrumental monitoring of weather conditions (precipitation, wind speed-direction [refer to AES Rainfall Data Collection Management & Recordkeeping Procedure. SOP-Eng-002]), daily nighttime watering of stockpile surfaces and pre-shift watering of haul roads, daily log of water truck use, covered transfer conveyors, continuous observation of visible dust emissions (VDE), daily sweeping / cleaning of paved roads, maintenance / repair of paved road surfaces, immediate cleanup of track-out and material spillage onto paved roads, prohibited use of blower devices or dry rotary brushes or brooms, enforcement of posted vehicle and moving equipment speed limits to 10 miles per hour (mph) or less , traffic restrictions, minimization of drop distances at transfer points, loading of trucks to prevent their contents from dropping/leaking/ blowing or otherwise escaping, sweeping or spray-cleaning and covering dump trucks prior to leaving the facility, 6-inch minimum bed freeboard clearance requirements for loading dump trucks, surface roughening-compaction of stockpile surfaces, placing stockpile ridges at right angles to prevailing winds, conducting loading and unloading activities on the downwind side of the stockpile, watering of exposed areas before forecasted high winds, restriction or termination of stockpile disturbance and hauling activities during high-wind conditions (i.e., 25 miles per hour or higher) and scheduled washing of mobile equipment.

At the start of each shift or material handling equipment startup and at least twice daily, the CPH/MH Operators will assess the operational status of all controls and record such assessments using the Dust Control Inspection Checklist in Appendix 3 which will be used to monitor the implementation and effectiveness of the control measures. Water truck operations may be curtailed during wet weather if the CPH/MH Operators confirm that the Agremax is sufficiently wet as to not require further wet abatement (one inch of precipitation is equivalent to an application of 5.6 gallons of water per square yard). These determinations will also be recorded in the Dust Control Inspection Checklist.

If after the implementation of primary control measures, visible dust emissions persist, contingency control measures including daytime wetting of stockpile with sprinklers, applying chemical dust suppressants, surfacing of unpaved haul roads with aggregate cover / aprons and restriction /termination of activities will be implemented. Because the control effectiveness of chemical dust suppressants depend on the dilution rate, the application rate, time between applications, size/speed / amount of traffic and meteorological conditions any chemical dust suppressants used will be applied according to the manufacturer's instructions.

If primary and contingency controls don't result in effective control, this SOP must be revised.

The dust type / source and the primary control measures used for each source can be described as follows:

6.1. Agremax- Ash / Paved Haul Roads

Description: Emissions can be generated from uncovered truck beds, spillage from haul trucks, vehicle dust carryout and track out. Wind and traffic, including plant (front end loaders, trucks and trailers) and customer vehicles, re-suspend the deposited material creating secondary sources of dust emissions. The average vehicle weight is highly variable, ranging from small pick-up trucks (1 ton) to large trucks / trailers (30 tons).

Control Methods and Equipment: Wet suppression by water truck with rear water sprinklers and water cannon, daily pavement cleaning with water hoses, speed limit restrictions to 10 mph or less posted along haul route, daily wet mechanical sweeping of pavement, immediate cleanup of material spillages, dump truck freeboard / cover, wheel washing and hosing at fixed station, curved shoulders and pavement surface repair as needed.

Frequency of Application: At the beginning of the work shift, whenever fugitive dust plumes are observed and as required to keep road surfaces wet, clean and structurally sound.

Monitoring: Twice Daily

Recordkeeping: Dust Control Inspection Checklist

6.2. **Agremax / Unpaved Roads**

Description: Emissions can be generated from wind erosion of uncovered truck beds and road surfaces and heavy equipment traffic (bulldozer, excavator, front end loader, trucks and trailers).

Control Methods and Equipment: Daytime wet suppression by water truck with rear water nozzles and water cannon, vehicle speed limits to 10 mph or less, dump truck freeboard / cover.

Frequency of Application: At the beginning of the work shift, whenever fugitive dust plumes are observed and as required to keep road surfaces wet.

Monitoring: Twice Daily

Recordkeeping: Dust Control Inspection Checklist

6.3. **Agremax / Stockpile.**

Description: Emissions are generated from the initial Agremax conveyor drop discharge into the stockpile area, pushing by heavy equipment to create the stockpile, loading and unloading of dump trucks to create the stockpile and for off-site transportation, pushing Agremax into the crusher feeding the conveyor to the dock and from wind erosion of stockpile surfaces.

Control Methods and Equipment: Nighttime wet suppression of stockpile surfaces by mobile sprinkler guns (10), daytime wet suppression of stockpile surfaces by water truck with water cannon, fixed water spay nozzles at conveyor drop discharge point, reduced drop heights for truck loading, hose wetting of crusher feed and dump truck unloading , surface roughening - compaction of stockpile surfaces with bulldozer, stockpile ridges at right angles to prevailing winds, confining loading and unloading to downwind side of stockpile, watering of exposed areas before forecasted high winds. Windbreaks and enclosures are not practical controls for the Agremax stockpile because of its size and continuous change in shape.

Frequency of Application: At the beginning of the work shift, whenever fugitive dust plumes are observed and as required to keep stockpile surfaces wet.

Monitoring: Twice Daily

Recordkeeping: Dust Control Inspection Checklist

6.4. Ash / Transfer to Bulk Trailers

Description: Fugitive dust emissions are generated during the chute connection and disconnection steps required for loading ash from the elevated storage silos into bulk trailers for off-site transportation.

Control Methods and Equipment: Discharge drop height control using articulated-telescopic loading spout, wet suppression with water spray nozzles at west side of loading bay, truck- trailer cleaning with water hose before leaving the loading bay.

Frequency of Application: Each loading

Monitoring: Twice Daily

Recordkeeping: Dust Control Inspection Checklist

6.5. Agremax / Dump Truck Loading and Unloading

Description: Dust emissions are generated during the loading of Agremax into dump trucks to create the stockpile or for off-site transportation and during unloading of dump trucks into the stockpile.

Control Methods and Equipment: Daytime wet suppression by water truck with rear water nozzles and water cannon or large hoses, front end loader and excavator discharge drop height reduction.

Frequency of Application: Each loading

Monitoring: Twice Daily

Recordkeeping: Dust Control Inspection Checklist

6.6. Agremax / Conveyor Loading and Transfer

Description: Dust emissions can be generated by wind blowing over the elevated conveyor used to transfer Agremax to marine vessels at the dock area and when it is discharged into the vessel's holding compartment.

Control Methods and Equipment: Covered conveyors, discharge drop height control with articulated- telescopic loading spout.

Frequency of Application: Each loading

Monitoring: Twice Daily (During Vessel Loading)

Recordkeeping: Dust Control Inspection Checklist

7. Training

To ensure that the dust control practices are followed, AES-PR will conduct an employee awareness training that will include all applicable dust control measures and the importance of strict compliance. Records of the trainings will be maintained, including the sign-in sheets.

7.1 The designated employees and/or contractors responsible for the performance and/or supervision of dust control activities must receive initial and yearly classroom and hands-on training on this SOP.

7.2 Training in this SOP will be provided prior to commencing duties at the affected areas and at least every year following the Training Syllabus in Appendix 4.

7.3 All trainings will be documented using the Employee Training Attendance Log in Appendix 5.

8. Monitoring and Recordkeeping

8.1. Inspections

Trained personnel will conduct twice-daily inspections to ensure that appropriate dust control measures are being implemented using the Checklist in Appendix 3.

8.2. Recordkeeping

All inspection checklists, logs, trainings and records related to this SOP will be kept for three years after the expiration of the site's storm water discharge permit.

9. References

1- AES Rainfall Data Collection Management & Recordkeeping Procedure. SOP-Eng-002.

2- Air & Waste Management Association. Air Pollution Engineering Manual. 2000.

3- California Stormwater Quality Association. California Stormwater BMP Handbook-Construction. Wind Erosion Control WE-1. May 2011.

4- Noyes Data Corporation. Dust Control Handbook. Pollution Technology Review No. 161. 1988.

5- US Department of Health and Human Services. Dust Control Handbook for Industrial Minerals Mining and Processing. January 2012.

6- United States Environmental Protection Agency (USEPA). Emission Control Technologies and Emission Factors for Unpaved Road Fugitive Emissions. EPA 625/5-87-022. September 1987.

7- USEPA. Control of Open Fugitive Dust Sources. EPA 450/3-88-008. September 1988

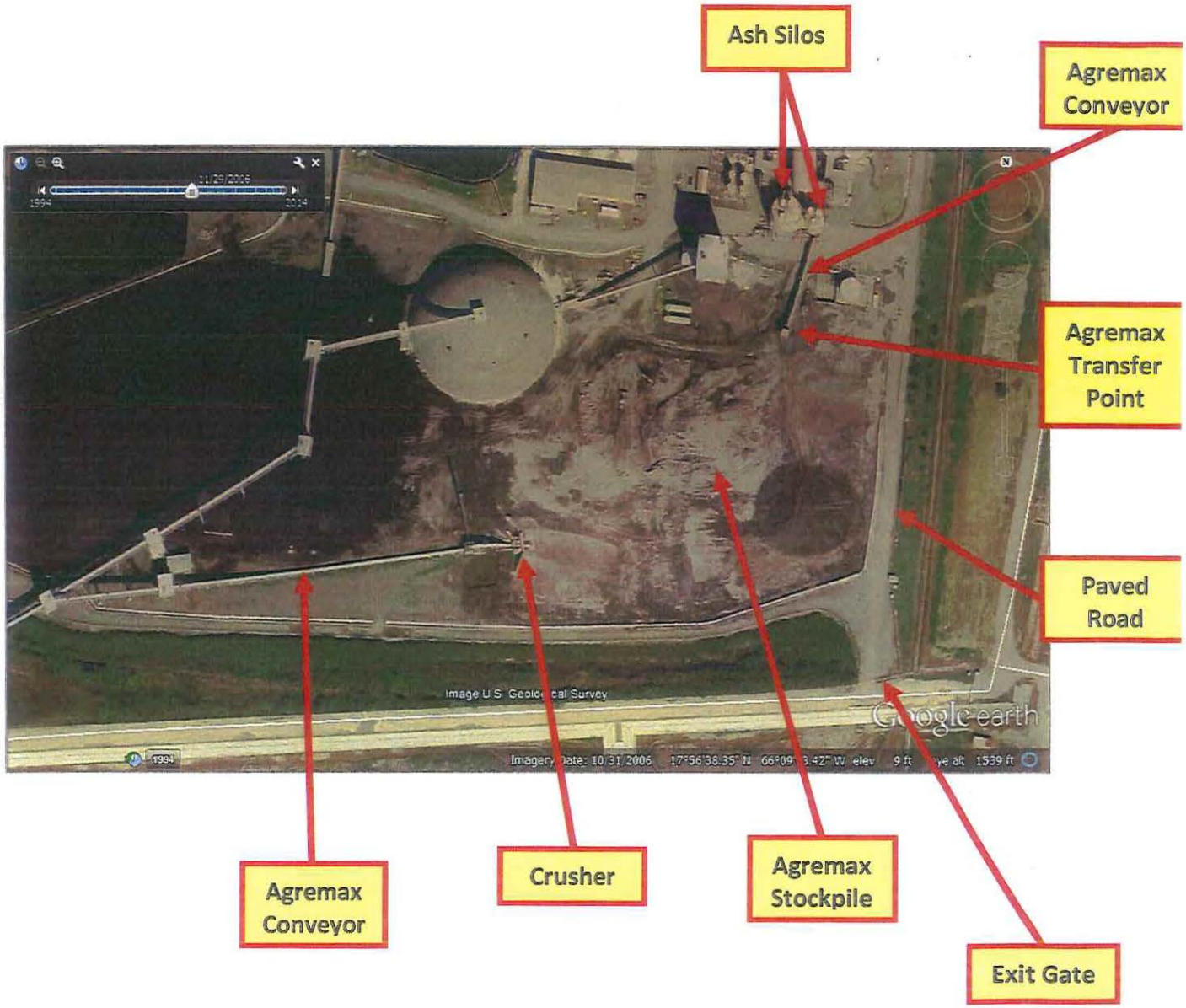
8- USEPA. AP-42 Compilation of Air Pollutant Emission Factors. Volume 1: Stationary Point and Area Sources. Chapter 13: Miscellaneous Sources. January 1995.

9- USEPA. Storm Water Management Fact Sheet- Dust Control EPA 832-F-99-003. September 1999.

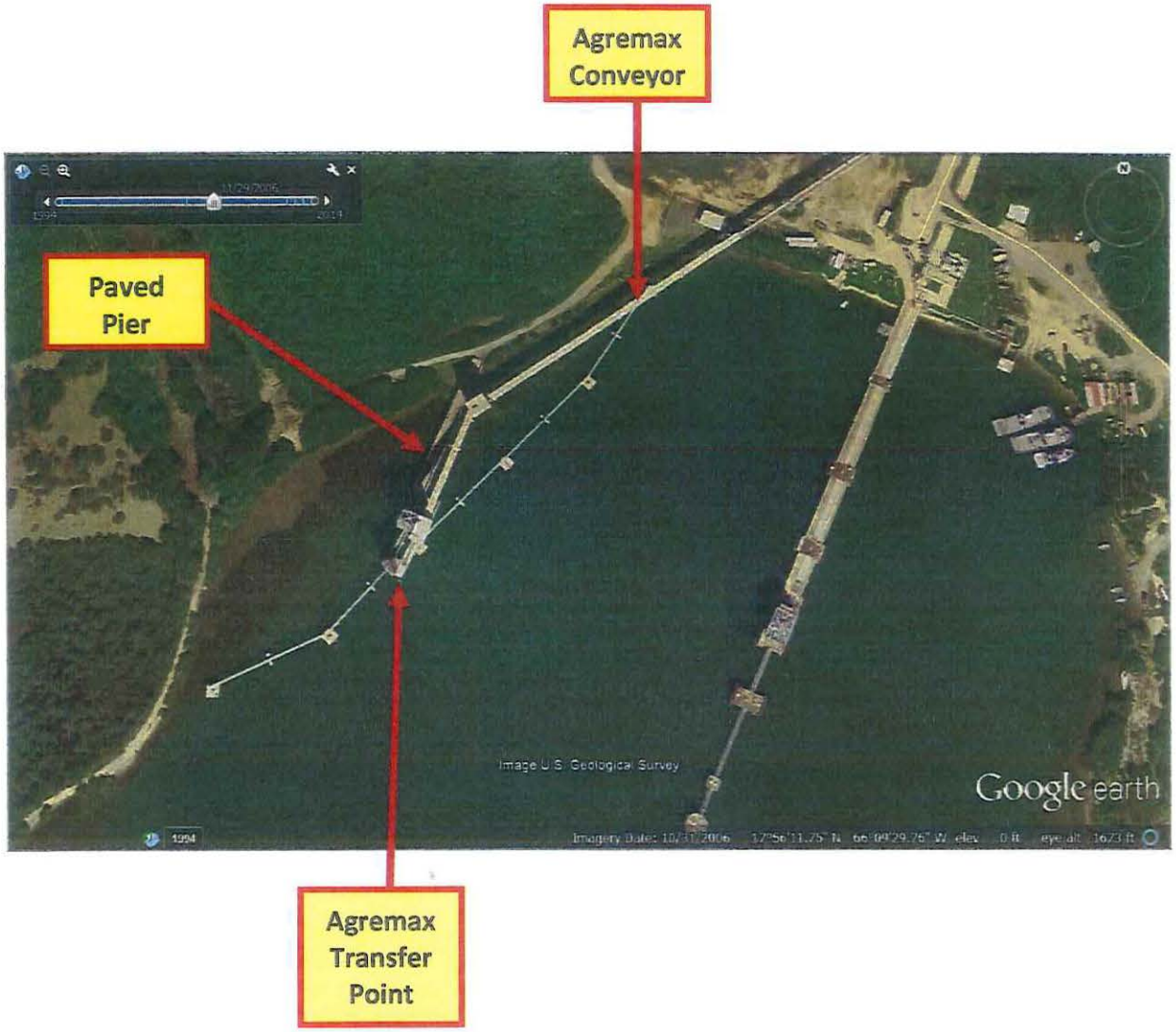
10- USEPA. Final National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Form Industrial Activities, Federal Register, Vol. 73, No. 189, September 29, 2008.

11- USEPA. Water: Best Management Practices; Dust Control. Source: http://www.epa.gov/polwaste/npdes/swbmp/Dust-C. Web Page last updated on Tuesday, July 1, 2014; Accessed and printed on March 27, 2015. [4 pages]

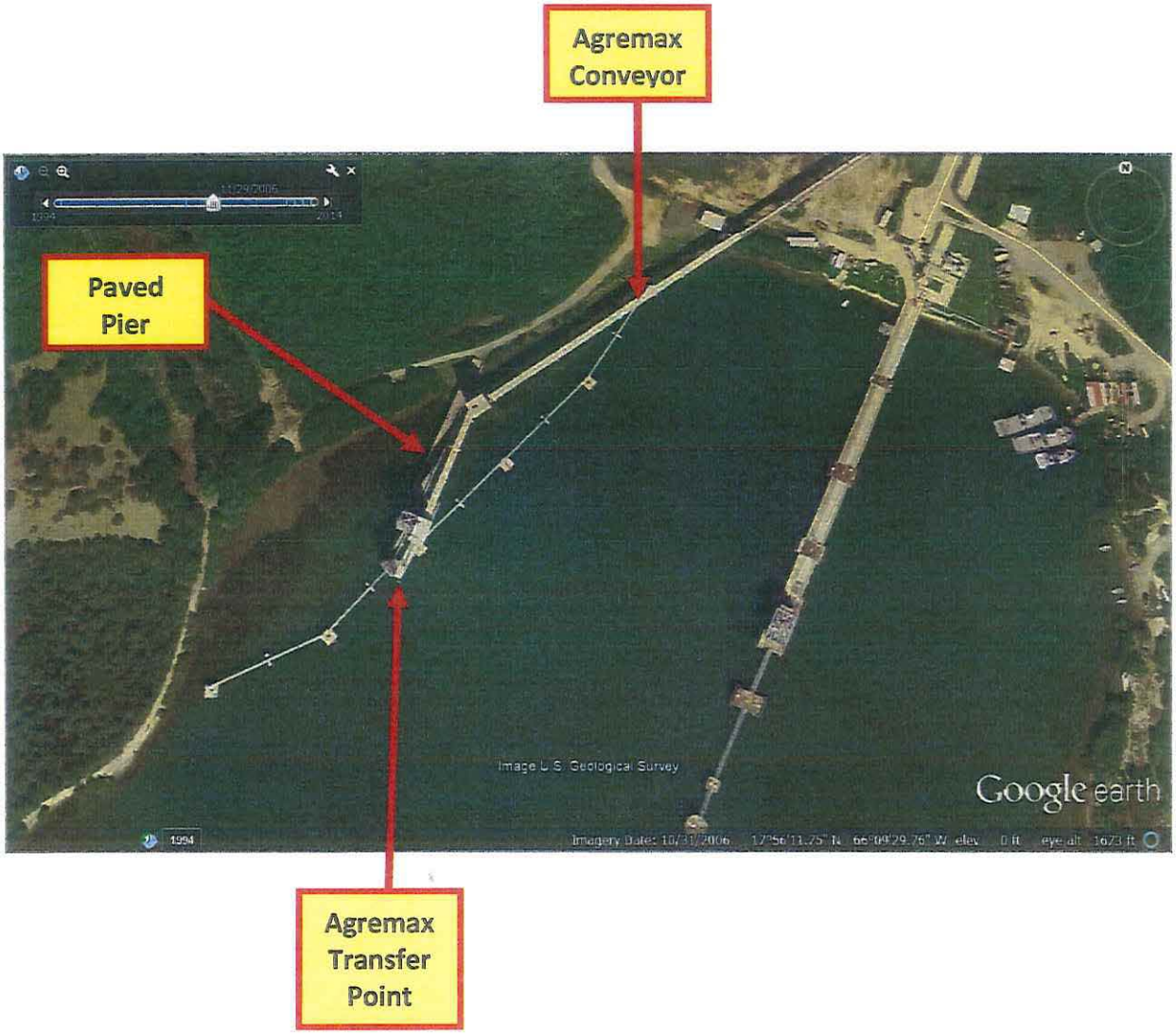
AES Puerto Rico
Plant Dust Control Map



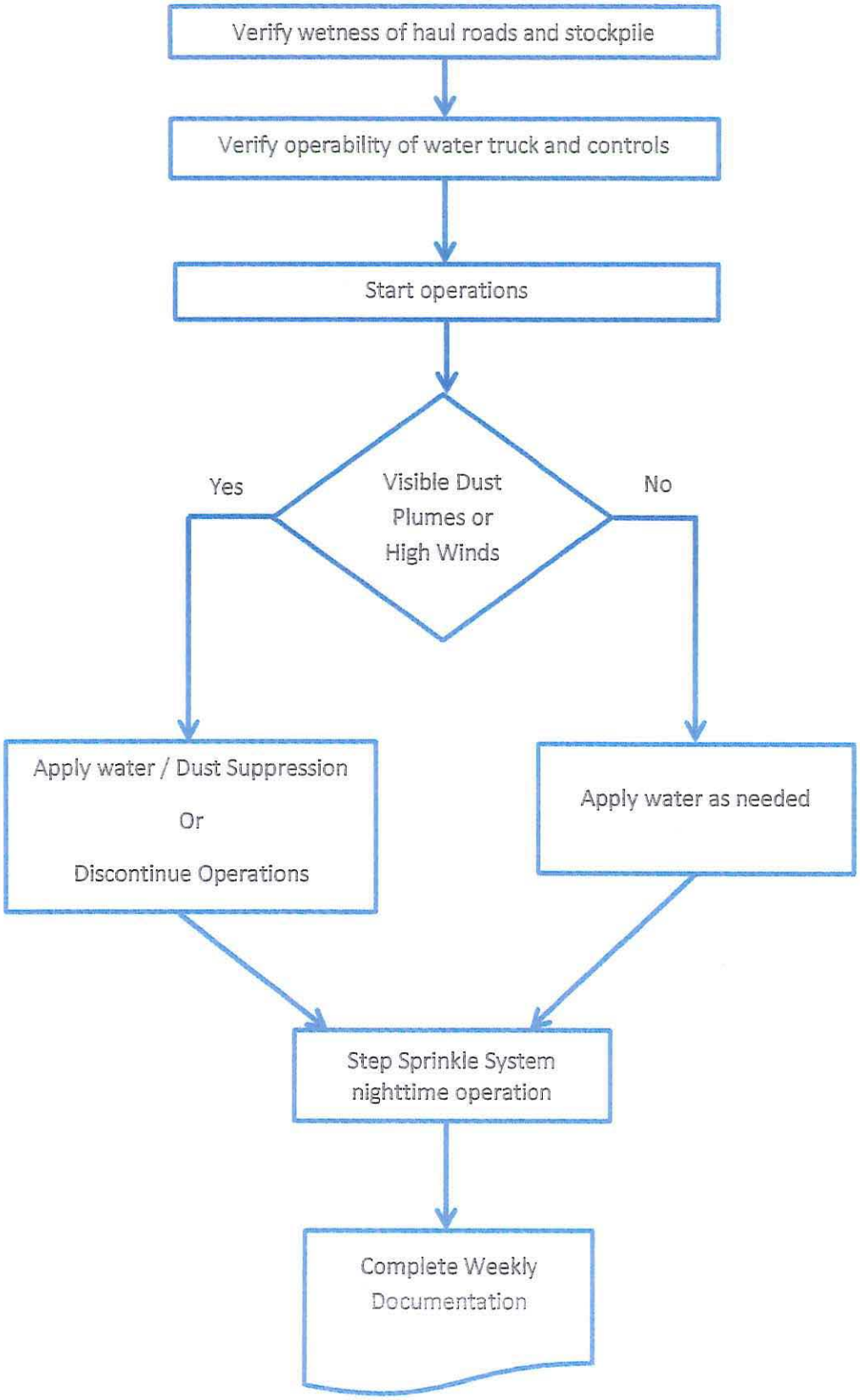
AES Puerto Rico
Plant Dust Control Map



AES Puerto Rico
Plant Dust Control Map



Dust Control Activity Flow Chart



AES Puerto Rico

Dust Control Checklist

Control Equipment

Skipper Sprinkler Guns (10)	_____ Operational	_____Not Operational
Water Truck (1)	_____ Operational	_____Not Operational
Broom Sweeper (1)	_____ Operational	_____Not Operational
Large Water Hoses ( )	_____ Available	_____Not Available

Paved Haul Roads

Surface in Good Condition	_____ Yes	_____ No
Wet Surfaces	_____ Yes	_____ No
Blowers or Dry Sweeping Used	_____ Yes	_____ No
Visible Emissions	_____ Yes	_____ No
Visible Speed Limit Signs Posted	_____ Yes	_____ No
Spilled Materials	_____ Yes	_____ No
Tracked Sediments	_____ Yes	_____ No
Wheel Washer Station	_____ Yes	_____ No
- Adequate Water level	_____ Yes	_____ No
- Adequate Aggregate Depth	_____ Yes	_____ No
- Aggregate Surface Clean	_____ Yes	_____ No

Haul Trucks

Within Speed Limits	_____ Yes	_____ No
Within Established Routes	_____ Yes	_____ No
Covered with Tarp	_____ Yes	_____ No

AES Puerto Rico

Dust Control Checklist

Control Equipment

Skipper Sprinkler Guns (10)	_____ Operational	_____Not Operational
Water Truck (1)	_____ Operational	_____Not Operational
Broom Sweeper (1)	_____ Operational	_____Not Operational
Large Water Hoses ( )	_____ Available	_____Not Available

Paved Haul Roads

Surface in Good Condition	_____ Yes	_____ No
Wet Surfaces	_____ Yes	_____ No
Blowers or Dry Sweeping Used	_____ Yes	_____ No
Visible Emissions	_____ Yes	_____ No
Visible Speed Limit Signs Posted	_____ Yes	_____ No
Spilled Materials	_____ Yes	_____ No
Tracked Sediments	_____ Yes	_____ No
Wheel Washer Station	_____ Yes	_____ No
- Adequate Water level	_____ Yes	_____ No
- Adequate Aggregate Depth	_____ Yes	_____ No
- Aggregate Surface Clean	_____ Yes	_____ No

Haul Trucks

Within Speed Limits	_____ Yes	_____ No
Within Established Routes	_____ Yes	_____ No
Covered with Tarp	_____ Yes	_____ No

Free of Debris _____ Yes _____ No

Adequate Freeboard _____ Yes _____ No

Low Loading Drop Height _____ Yes _____ No

Unpaved Haul Roads

Wet Surface _____ Yes _____ No

Aggregate Cover _____ Yes _____ No

Over Watering Observed _____ Yes _____ No

Road Erosion Observed _____ Yes _____ No

Visible Emissions _____ Yes _____ No

Conveyors

Silos to Stockpile Fully Enclosed _____ Yes _____ No

Stockpile to Dock Silos Fully Enclosed _____ Yes _____ No

Water Applied at Conveyor Drop Point _____ Yes _____ No

Water Applied at Crusher Feed _____ Yes _____ No

Visible Emissions _____ Yes _____ No

Fixed Transfer Points

Silos to Stockpile Water Sprays Operational _____ Yes _____ No

Stockpile Crusher Feed Wet _____ Yes _____ No

Conveyor to Marine Vessel
Telescoping Spout Operational _____ Yes _____ No

Silos to Bulk Trailers
Telescoping Spout Operational _____ Yes _____ No

Leak Proof Spout Connection _____ Yes _____ No

Ash Silos Water Curtain Operational _____ Yes _____ No

Agremax Stockpile

Wet Stockpile Surfaces	_____ Yes	_____ No
Water Sprays Overlap	_____ Yes	_____ No
Chemical Dust Suppressants Used	_____ Yes	_____ No
Activities on downwind side	_____ Yes	_____ No
Slope Surface Roughening /Compaction	_____ Yes	_____ No
Ridges at Right Angles to Prevailing Winds	_____ Yes	_____ No
Slope Erosion Observed	_____ Yes	_____ No
Visible Emissions	_____ Yes	_____ No

Wind Speed_____ **Wind Direction**_____

Comments:_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Name / Signature_____

Date_____ Time_____

DUST CONTROL TRAINING SYLABUS

Subject Category: Compliance with permit requirements

Training Length: 2- 4 hr

Delivery Mode: Lecture, field exercise

Training Instructional Materials / Handouts: Power Point Presentation and Hard Copies

Schedule: Once / year

Training Purpose: Provide information to employees responsible for ash and Agremax handling activities

Instructors: AES or contracted

Written Exam: No

Practical Exam: Yes

WEB Resource: N/A

Topics to be covered:

- Dust Control Requirements
- Fugitive Dust Sources
- Primary and Contingency Controls
- Prohibited Practices
- Responsibilities
- Monitoring and Recordkeeping
- Corrective Actions

AES Puerto Rico

Dust Control SOP Training Attendance

Date: _____

Name	Shift/Team	Signature
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		

Title:
EMERGENCY RESPONSE PLAN

Approvals:

	Signature	Date
Prepared by Safety Team Leader Francisco González		
Reviewed by Environmental Coordinator Hector Avila		
Maintenance Manager Ramiro Rivera		
Engineering Manager Csaba Little		
Operation Manager Elias Sostre		
Plant Manager Manuel Mata		

Distribution List:

Internal

1. Environmental
2. Safety
3. Plant Manager
4. Control Room
5. Water Treatment
6. Administration Lobby

External

7. Fire Department -Guayama
8. Fire Department - Ponce
9. Local Emergency Planning Committee
10. EQB - Guayama
11. EQB – Central Office Administration
12. EPA Caribbean Office
13. EPA Region II - SPCC

Title:
EMERGENCY RESPONSE PLAN

Approvals:

	Signature	Date
Prepared by Safety Team Leader Francisco González		
Reviewed by Environmental Coordinator Hector Avila		
Maintenance Manager Ramiro Rivera		
Engineering Manager Csaba Little		
Operation Manager Elias Sostre		
Plant Manager Manuel Mata		

Distribution List:

Internal

1. Environmental
2. Safety
3. Plant Manager
4. Control Room
5. Water Treatment
6. Administration Lobby

External

7. Fire Department -Guayama
8. Fire Department - Ponce
9. Local Emergency Planning Committee
10. EQB - Guayama
11. EQB – Central Office Administration
12. EPA Caribbean Office
13. EPA Region II - SPCC

AES
Puerto Rico

Emergency Response Plan

May 2015

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1.0 INTRODUCTION

1.1 Applicability

The AES Puerto Rico Emergency Response Plan (ERP) applies to all employees, contractors and visitors of the AES Puerto Rico LP site in Guayama, Puerto Rico.

1.2 Purpose and Scope

1.2.1 This plan has been prepared to comply with environmental and safety regulations applicable to AES Puerto Rico's operations. The National Response Team's Integrated Contingency Plan Guidance Document (NRT-1) and the National Incident Management System (NIMS) were also consulted for the purpose of consolidating the various emergency response plan requirements into one functional plan. The plan satisfy the requirements of the following laws and regulations:

- EPA's Oil Pollution and Prevention Regulations (SPCC and Facility Response Plan Requirements); 40 CFR part 112
- EPA's Risk Management Programs Regulations; 40 CFR part 68
- EPA's Determination of Reportable Quantities for Hazardous Substances; 40 CFR part 117
- EPA's CERCLA Release Reporting; 40 CFR part 355
- EPA's Resource Conservation and Recovery Act; 40 CFR part 262 and 40 CFR part 279
- OSHA's Emergency Action Plan Regulation; 29 CFR 1910.38(a)
- OSHA's HAZWOPER Regulation; 29 CFR 1910.120
- EQB Air Pollution Control Reulation Rule 107 (a), (c) and (d)
- AES Global Safety Emergency Preparedness Standard AES-STD-8.0
- AES Puerto Rico, LP Risk Assessement Matrix (Safety Management System)
- And other relevant local and Puerto Rico laws and regulations

The purpose of this plan is to establish and document the plant policies and organization to effectively prevent and respond to possible emergencies. The plans and procedures set down in this plan are concerned with plant-wide emergencies and also emergencies that, while not plant-wide, are of general enough nature that they might occur anywhere in the plant.

The usefulness of this manual depends on the timeliness of the information contained. It is the responsibility of each individual to insure that the information contained in the section(s) covering their area(s) of responsibility be kept current. All requests for revision should be communicated to the Plant Safety Team Leader, Environmental Coordinator and Safety Steering Committee members.

Maintaining an efficient emergency organization with procedures to cover emergency conditions is essential to the safety and security of our people, the protection of our plant and community. This manual has been prepared for the use of all AES Puerto Rico people and contains the policies and procedures applicable to foreseeable plant emergencies, provision for adequate emergency training, and designation of the plant functions related to receiving aid under the 911 Mutual Aid System.

Copies of the Emergency Response Plan are available in the Control Room, Water Treatment, Administration Building, Environmental Coordinator and Safety Team Leader Offices. A copy can be reviewed by all employees and relevant Federal and Local Regulatory Agencies who requested it. All AES Puerto Rico people and contractors shall comply with the requirements of this plan.

- **AES Puerto Rico Plant Manager** is the ultimate responsible person for providing the resources required to plan, sustain and update the Emergency Response Plan (ERP) as per the emergency risk assessment outcome and the availability of reasonable resources.
- **AES Puerto Rico Safety Team Leader and the Environmental Coordinator** are responsible for keeping the Emergency Response Plan (ERP) updated including its communication to the relevant stakeholders and coordinating the ERP training activities for internal stakeholders.
- **AES Puerto Rico Operation, Material Handling, Maintenance and Engineering Managers** are responsible to provide the resources required supporting the planning, implementation and reviewing phases of the Emergency Response Plan, the Incident Command System (ICS) and the emergency event response actions required as per the ERP.

1.3 FACILITY DESCRIPTION AND GENERAL INFORMATION

AES Puerto Rico (AES-PR) is a coal fired power plant that generates and sells 454 MWs of electricity to the Puerto Rico Electric Power Authority. The facility is located on an 85 acres tract of land owned by AES Puerto Rico on State Road No. 3, Km 142 Puente Jobos Ward in Guayama, Puerto Rico. It occupies associated rights of ways for transmission lines, conveyors, make-up water supply lines, process steam piping and roads. East of AES-PR power plant site is a vacant lot (former Chevorn – Phillips refinery). To the south of the facility is an area of wetlands, the Las Mareas Harbor and the Caribbean Sea. To the north and northwest are a vacant lot, State Road #3, Baxter Pharmaceuticals and TAPI Industries. Directly west is also a vacant lot with wetlands and AES Ilumina, photocell solar power plant.

The facility consists of two boiler and steam turbine units, a wet cooling tower, water treatment, coal, limestone and ash handling systems. The boilers are coal fired Circulating Fluidized Bed (CFB) boilers with NO_x, SO_x and particulate matter air emissions control equipment. Coal is delivered by sea vessel to the docking facility at Las Mareas Harbor. Also, we can ship Coal Combustion Product (CCP)/"Agremax" through a closed conveyor into a sea vessel on Las Mareas Harbor docking facility. All other plant consumables such as #2 diesel fuel oil, propane, Purate®, sulfuric acid, sodium hydroxide, sodium carbonate, calcium oxide, limestone and urea are delivered by truck.

About 110 persons are employed at the site in two shifts (12 hours shift) per day, 24 hours per day and 7 days per week. The administrative employees work in the normal 8-hr shift from 8:00 a.m. to 5:00 p.m.

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2.0 WHAT CONSTITUTES A PLANT EMERGENCY

The causes of serious emergencies may be broken down into four main categories:

1. ***Unexpected Operational Incidents*** - These may result in fires, explosions, injuries, plant shutdowns, spills or chemical release.
2. ***Forces of Nature*** - These may include severe weather conditions, such as hurricanes, tornadoes, hail, heavy rains, floods, and lightning or earthquakes and tsunamis.
3. ***Deliberate Damage*** - This may occur because of malicious mischief, terrorism, sabotage or direct action.
4. **National/Local Environmental Emergencies** – These may includes air pollution emergencies declared by the PR Environmental Quality Board (EQB), water pollution emergencies declared by PR Aqueducts and Sewers Authority, Health Department, EQB or environmental emergencies declared by the US Environmental Protection Agency, Department of Homeland Security or the Governor of Puerto Rico.

The following emergency conditions are guides for activating the Emergency Response Plan and procedures outlined in this manual:

- Plant upset conditions, which cannot be controlled by the operations team on shift, requiring immediate additional plant people assistance.
- An emergency condition that presents real danger to the people on site, plant equipment, environment, our neighbors or community. These situations could involve oil or chemical releases, fire, uncontrolled emissions, etc.
- Workplace injuries, minor or life threatening.

The principle considerations in cases of emergencies are:

- To perform basic functions as necessary without endangering the lives of people.
- To rescue and provide medical care of injured persons.
- To prevent a spread of the emergency.
- To prevent and mitigate pollution impacts to the environment or the community.
- To protect property already involved from further damage.

ASSESSING THE SITUATION AND ISSUING THE ALERT

INFORMATION

Detection by a person
- Radio
- Telephone (G-tronics)
- Fire Pull Box
- External Phone
- Verbal

Emergency location
- Building
- Storage
- Equipment
- Transporatation

NATURE OF THE EVENT
- Medical Emergency
- Fire
- Explosion
- Flammable gas leak
- Pollution

INCIDENT LEVEL

Scope? Area/Location/Equipment/Amount
Stage? Beginning, growing, diminishing, stable
Impact? Community, transport, environment

Determine the nature of the incident and contact Shift Team Leader (STL).

Who? The person who detects the event.

IS THIS AN EMERGENCY?

Take charge of the response process.

Who? The Shift Team Leader (STL)

CAN THE EMERGENCY BE CONTROLLED IMMEDIATELY?

Identify potential consequences and damages.

Who? The Shift Team Leader (STL)

INFORMATION

Take action if trained to do so and if the emergency can be controlled immediately.

- Close valves using the devices in place;
- Extinguish small fires using portable extinguishers;
- Contain spill to reach a stormwater sewer or natural water body
- Report the situation to the STL or Incident Commander

STAY OUT OF DANGER

3.0 EMERGENCY RESPONSE INCIDENT COMMAND SYSTEM

The **Incident Command System (ICS)** is the administrative structure to control the people, equipment and material, installation and communication to effectively and safely respond to an emergency event in a cost effective manner without duplication of effort or activities.

The **Incident Command System (ICS)** is composed the following members:

- **Incident Commander (IC):** Responsible for overall management of the incident response. Directly controls the command staff and the sections staff.
- **Command Staff:** Work directly under the incident commander.
- **Safety Officer:** Responsible for recommending and monitoring measures for assuring personnel safety and to assess and /or anticipate hazardous and unsafe situations.
- **Public/Press Information Officer:** Responsible for developing and releasing information about the incident to the news media, incident personnel and other appropriate groups or agencies.
- **Liaison Officers:** The contact personnel assigned to the incident by assisting or cooperating agencies not involved with tactical assignments or in a unified command.
- **Section Chiefs:** Leaders of the Operational, Planning, Logistics and Finance functional teams.

- **Planning Team:** Responsible for collection, evaluation, dissemination and use of information about the development of the incident and the status of resources. Supervises preparation of the incident response plan. Planning also conducts the briefing and debriefing sessions. The **Safety Team Leader and the Environmental Coordinator** are responsible for keeping the Emergency Response Plan (ERP) updated as members of the ICS Planning Team.
- **Operations Team:** Responsible for the management or execution of all emergency operation involved in the incident response. Within this team are the following positions: Hazmat responders, Rescue personnel, Confined Space Attendants and Entry and back up members, Rigging team members, Decontamination team members, First Aid responders, etc.
- **Logistics Team:** Responsible for the accumulation, location and distribution of all needed equipment.
- **Finance Team:** Responsible for tracking expenses of the operation, including equipment, supplies and man-hours.
- **Decon Team:** Responsible for all decontamination operations.
- **First Aid Responders:** Responsible for first aid treatment of event victims.
- **Attendant:** Tracking entrants and equipment; summons rescue personnel.
- **Rescuers/ Rigging Team:** Responsible for the coordination, rescue and evacuation of patient, victim and entry team members and operation of retrieval systems.

The **Shift Team Leader on shift** will take responsibility as Incident Commander (IC). **AES Plant Manager or other Managers or their designee** may take responsibility as On-Site Incident/Business Recovery Commander (OSC). The OSC's and IC's are authorized to take immediate actions as necessary to prevent or control emergency situations. This provision for coverage of OSC and IC ensures round the clock coverage of designated leadership during any crisis. In case of an emergency that have the potential to be classified as a National Security Incident, the Maritime Facility Security Officer (FSO) will be contacted immediately to activate the Facility Security Plan (FSP).

The IC and/or OSC will take charge of any accident or emergency scene until relieved, request outside assistance or direct that outside agencies be notified. The following people are listed as contacts in the event an emergency should occur in their respective areas. Additionally, these people can be contacted for further guidance on the specific duties required in the Emergency Response Plan, other relevant plans and regulations.

Incident Commanders (IC)

Name	Position	Work Telephone (787) 866-8117 Extension
Jose F. Manautou	Shift Team Leader	2244/2245/2404
Harold Bernier	Shift Team Leader	2244/2245/2404
Willy M. Santiago	Shift Team Leader	2244/2245/2404
George Gelada	Shift Team Leader	2244/2245/2404
Marco Aresti	Material Handling/CCP Team Leader	2257
Carlos Gonzalez	CCP Project Manager	2239

On-Scene Incident/Business Recovery Commanders

Name	Position	Work Telephone (787) 866-8117 Extension	Cell Phone
Manuel Mata	Plant Manager- **PUBLIC/PRESS INFORMATION OFFICER**	2233	787-408-9777
Elias Sostre	Operation Manager	2222	787-615-6491
Ramiro Rivera	Maintenance Manager	2208	787-612-1410
Csaba Kiss	Engineering Manager	2216	787-390-0956
Weili Yu	Material Handling Manager	2240	787-486-0487

Incident Command Staff

Name	Position	Work Telephone (787) 866-8117 Extension	Cell Phone
Francisco Gonzalez	Safety Team Leader and Maritime Facility Officer (FSO)- **SAFETY OFFICER or LIAISON OFFICER; PLANNING TEAM MEMBER**	2230	787-614-4453
Hector Avila	Environmental Coordinator- **LIAISON OFFICER; PLANNING TEAM MEMBER**	2266	787-664-9033
Henrick Roman	Warehouse Supervisor- **LOGISTICS OFFICER**	2242	787-612-1410
Michelle Lopez	Supply Chain Team Leader- **LOGISTICS TEAM MEMBER**	2249	787-407-7228
Eddie Marrero	Lead Maintenance- **RESCUE OFFICER**	2227	787-390-1196
Erico Cintron	Lead Maintenance- **RESCUE OFFICER**	2236	787-484-0166

Initial Response

The Control Room Operators should ensure that everyone on site is notified that an emergency is in progress by passing the word on the radio and the plant paging system. Everyone not involved should stay away and upwind of the spill. Team Leaders and Managers should be notified.

The on-shift trained Plant Operators and Technicians for hazardous material operations supervision will assume the responsibility as On-scene Coordinator until relieved by the Manager or Team Leader. A determination of whether federal and local authorities need to be notified should be made based on the magnitude and extension of the emergency incident circumstances and potential impacts and applicable regulations.

An Incident Command Post (ICP) needs to be established away from the incident hot spot location. The ICP shall be the location where the Incident Commander (IC) and the Incident Command Staff shall meet to establish the Incident Command System (ICS) to manage the incident response according to the objectives, strategies and priorities identified.

The shift emergency response team should be assembled at an area away from the incident hazardous area. A preliminary job briefing should be conducted with the goal of assessing the situation, hazards involved, magnitude of the problem and whether outside help is required.

The Incident Commander with the assistance of the Incident Command Staff shall establish the procedures and methods to control the access to the incident "hot" zone. They need to establish the emergency response work zones to control access of unathorized personnel. The following work zones shall be established:

- **Exclusion Zone:** Location where the spill, release or hazardous event occurred.

- **Contamination Reduction (DECON) Zone:** Location where the decontamination of emergency responders and equipment takes place; a decontamination corridor shall be established.
- **Support Zone:** An uncontaminated area where personnel shall not be exposed to the contaminants or hazards related to the emergency event. The Support Zone shall be the location where stand-by emergency responders are ready to back up the responders inside the Exclusion Zone. The Support Zone shall have designated access control points.
- **Base:** Location where all emergency equipment and material avalilable on site is storaged and they are ready to be dispatched.
- **Distribution Center (Centro de Acopio):** Location where the emergency responders get and wear the emergency equipment to be ready to respond to the incident.
- **Campsite:** Location where break rest tents, restrooms, food, water and other daily supplies are available for the personnel.

The **2012 Emergency Response Guidebook** shall be consulted to determine intial steps of the chemical release response incident or refer to **Section 15 HAZMAT EMERGENCY RESPONSE GUIDELINES.**

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4.0 GENERAL ASSIGNMENTS

OVERALL COORDINATION –

4.1 The **Shift Team Leader** on duty will assume the responsibility of Incident Commander until the **Plant Manager, Assistant Plant Manager or Operation Manager** arrives.

4.1.1 The **Plant Manager, Assistant Plant Manager or Operation Manager Shift Team Leader or their designee** in that sequence based on availability and emergency level, will direct the overall emergency assuming the incident command.

COMMUNICATIONS –

4.1.2 All emergencies should be communicated to the Control Room by telephone, radio or plant announcing system.

4.1.3 The **Shift Team Leader** with the support of the **Operational Operators and other Team Leaders** will coordinate communications, plant personnel notifications and dispatching assistance to the scene of an emergency. Records of reported emergencies will be kept by the **Shift Team Leader** in the Control Room Activity Log Book.

EMERGENCY FIRST AID –

4.1.4 **AES people** who have been trained in First Aid/CPR should respond to the scene of an injury as needed.

4.1.5 Determination can be made by persons at the scene of an injury in communication with the **Shift Team Leader** if outside assistance or medical treatment is required.

NEWS MEDIA RELEASES –

4.1.6 News releases will be made by the **Plant Manager or his designee** only.

4.1.7 **Plant Manager** express authorization is required before any news reporter can be admitted to the plant.

4.1.8 If news media personnel arrive at the gate they should be told to wait outside of the property unless invited in by the **Plant Manager or his designee**.

TRAFFIC CONTROL –

4.1.9 Access to the site during any fire, chemical or major emergency can be denied to non-essential persons by the gate security officers once notified to do so by the **Shift Team Leader, Manager or designee** in charge of the emergency response.

4.1.10 Inside plant vehicle traffic will be directed by the persons designated by the **Shift Team Leader, Manager or designee**.

PLANT SECURITY –

4.1.11 Access is controlled by **Contractor Security Officers** at the plant access points/gates.

4.1.12 Assistance from the **Puerto Rico Police, Municipality of Guayama Police or other federal or state public security officers** can also be called upon during an emergency to control the access to the emergency scene and to coordinate evacuation of affected community.

4.1.13 No persons or vehicles will enter the plant unless authorized by **Shift Team Leader, Manager or his designee**.

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4.1.13 No persons or vehicles will enter the plant unless authorized by **Shift Team Leader, Manager or his designee**.

4.1.14 Visitors, persons not employed or contracted by AES and their vehicles will be removed from the site as quickly as possible if emergency circumstances allow it.

POWERED INDUSTRIAL TRUCKS AND MOBILE EQUIPMENT–

4.1.15 **Warehouse, Material Handling and Maintenance personnel** shall support with any industrial mobile equipment such as cranes or bulldozers or powered industrial truck as forklift to respond to the emergency event as needed. They will provide necessary qualified people to operate the heavy machinery and perform other maintenance work required.

OPERATION, MAINTENANCE AND MATERIAL HANDLING TEAMS –

4.1.16 They shall monitor and operate power plant equipment as needed.

4.1.17 Immediately notify the **Shift Team Leader or Control Room Operators** of any plant operational changes that could jeopardize the safe and proper operation of the power plant equipment or system. They shall provide assistance at the scene of an emergency only if trained and available to do so.

5.0 REPORTING AN EMERGENCY

5.1 Notify the **Shift Team Leader at the Control Room** by telephone (787-866-8117 ext. 2244/2245/2404), radio (channel #3 or channel #4 "Startup") or PA G-tronic system.

5.2 The **Shift Team Leader or his designee** (e.g. control room operators) **will call 911** if immediate outside assistance is required.

5.3 The following information should be provided to the **911 emergency operator**:

- **Who you are** - (Your Name) at AES Puerto Rico.
- **Location** – Road #3, Km 142, Guayama, PR 00784
- **Return phone number** - (787) 866-8117 & extension #.
- **What you need to respond** - (Fire, Ambulance, Police; whatever the emergency requires)
- **A detail description of the emergency situation** including exact event location and extension, emergency circumstances, number of people involved if any and any other pertinent information.
- Be sure that all information is understood and acknowledged before hanging up. The 911 emergency operators should hang up first.

5.4 Document the call in the Control Room Operator Log Book.

5.5 Notify the **Security Officer** at the gate that assistance is on the way; 787-866-8117, ext. 2220.

5.6 **If there is plant-wide danger, activate the evacuation alarm system and follow the emergency evacuation procedure.** Please, refer to **section 7 of this plan for description of evacuation procedure.**

5.7 A phone list will be maintained for **Team Leaders** and other persons for emergency call in, depending on the situation.

5.8 **Shift Team Leader or other Team Leaders** will organize available on-site people to help direct emergency units to area required as someone familiar with the site would help emergency personnel a great deal.

5.9. After phone 911 operator and if the situation warrants, or is seen as getting more and more extended, **Shift Team Leader or his designee** will notify neighboring facilities for help, they are available on a mutual aid basis.

5.10. Additional **Security Officers** should be called out as needed.

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5.10. Additional **Security Officers** should be called out as needed.

5.11 In **case of chemical or oil release,** the **Shift Team Leader or his designee** shall contact without delay the **Environmental Coordinator** to determine with the **Shift Team Leader** if a Reportable Quantities was exceeded. Based on the analysis, it will be identified the applicable regulatory reporting requirements and coordinated the immediate notification by telephone and fax to the relevant regulatory agencies. **If the chemical or oil release occurs at AES Las Mareas Port facility**, the **Shift Team Leader or his designee** shall contact without delay the **AES Puerto Rico Maritime Facility Security Officer (FSO)** to allow him to promptly notify the National Response Center (NRC) the maritime transportation incident and determine the emergency response course of action to follow as needed.

5.12 **Shift Team Leaders or his designees** should record the time, date and person's names whenever emergencies are reported both internally and to outside agencies. The **Shift Team Leader** is responsible of the recordkeeping of the emergency reported.

6.0 FIRST AID PROCEDURES

A. CAUSTIC or ACID CHEMICAL EYE BURNS

If even minimal quantities of caustic or acid chemicals, sulfuric acid, phosphoric acid, or hydrochloric acid, either in solid form or liquid, enter the eyes, they should be irrigated immediately and copiously with water. Prompt irrigation of caustic and acid eye burns cannot be over-emphasized. The eyes should be irrigated for a minimum of 15 minutes at the time and scene of the accident with "WATER" before the patient is moved for further treatment. The eyelids should be held apart and the eye rotated during the irrigation to ensure contact of the "WATER" with all the tissues of the surface of the eye and lids. On arrival at the First Aid station, the eye should be irrigated with "WATER" and given continuous irrigation for at least 15-20 minutes or more, depending upon the extent of exposure. After the irrigation is complete, cover the eye with a sterile patch and send the patient to a physician.

B. CAUSTIC SODA OR SULFURIC ACID BURNS OF THE BODY

A person who has had caustic/NaOH or sulfuric acid spilled, splashed, or sprayed upon them should be subjected immediately to a drenching shower of water. Their clothing should be removed as quickly as possible, while they are under the shower and First Aid responders called at the earliest possible moment. It is essential that all effected body surfaces be washed with copious

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quantities of running water until all traces of the caustic or sulfuric acid have been removed. After all traces of the Caustic/NaOH or sulfuric acid have been removed, the patient must be transported to a medical facility for further treatment. Call an ambulance by informing the Control Room. On the arrival of the Emergency Medical Technicians, the affected body surfaces can be washed with a neutralizing "Buffer" solution for sulfuric acid burns and caustic/NaOH burns. Make certain that all affected areas have been thoroughly cleaned and free of all chemicals. If the burn is of a minor nature, immerse the burned area in cold water until all pain subsides and cover with a sterile dressing.

In cases of severe or extensive burns, shock symptoms, such as rapid pulse, sweating, and collapse, may occur at any time. If such symptoms should appear, keep the patient lying on their back and keep them warm until he can be seen by a physician. **NOTE: Do not use a spray or ointment on the wound; cover with a sterile burn dressing.**

C. ELECTRIC SHOCK

Keeps the victim lying down with the feet slightly elevated unless there are chest injuries. Notify the Control Room to call for an ambulance by dialing 911. Cover victim with blanket or other covering to keep warm. Do not cause sweating. Put sterile dressings on burns. In electrical accidents, the shock is likely to affect the patient's heart and lung action. Cardiopulmonary Resuscitation may be required.

All electric shock victims should be taken to the hospital for examination and observation, no matter how minor the shock. Some injuries or irregular heartbeat may not be apparent.

D. CARDIAC OR RESPIRATORY ARREST

Check for breathing by listening for airflow at mouth and nose, look for breathing movements and feel for air exchanges. If none of these are present, clear airway and begin artificial respiration and check carotid pulse to insure heart is beating. Transport patient to hospital and continue artificial respiration until patient is breathing on his own or until relieved by hospital people.

E. HEART ATTACK

Keep patient at rest and comfortable in sitting position. Notify the Control Room to have someone call for a Paramedic Rescue Unit by dialing 911. It is important that the patient's condition be stabilized before being transported. If cardiac arrest occurs, begin cardiopulmonary resuscitation and continue until relieved by paramedics. Signs of Cardiac Arrest:

- No respiration
- No pulse
- Dilated Pupils

Automated External Defibrillator (AED) units are located on the administration building lobby and at the control room in the 3rd floor of the power block that can

be used to provide assistance to a suspected heart failure victim. To operate the AED unit follows the verbal instructions given by the AED unit's voice.

F. GENERAL PROCEDURES FOR SERIOUS INJURY

1. Render immediate assistance to the injured to the maximum extent possible.
2. If possible, at least one person should remain with the injured while another seeks help or First Aid supplies. Notify the Control Room to call the emergency number 911. Request that First Aid trained or Emergency Medical Technician qualified people on site respond to the scene.
3. Call the guard at the main gate to provide directions to the ambulance of the exact location of the injured or arrange for an AES person to meet the ambulance or other emergency response vehicle at Security to direct them to scene of the emergency.
4. Do not move the injured unless absolutely necessary to protect them from further harm. Use extraordinary care and common sense in handling the patient to avoid aggravating their condition.
5. If breathing has stopped, check for a pulse. If a pulse is not present, start CPR immediately.
6. If there is bleeding, use the closest and cleanest available piece of cloth directly over the wound, using your full hand to apply direct pressure to the bandage over the wound.

7. A seriously injured person is usually in shock. Keep the body warm by using blankets or other suitable protection available, underneath as well as over the body. If possible, elevate the feet at least six inches and attempt at all times to keep the head lower than the feet.
8. Talk to the patient. Attempt to calm and encourage them by assuring them that they will be "OK", and that expert medical attention will soon arrive. Do not allow people to crowd around the injured, and by all means remain calm yourself.
9. Notify the injured person's supervisor or the Plant Manager.
10. If decision is made to notify an injured person's family, the Plant Manager, one of the Team Leaders or someone that knows the family, should make the necessary calls.
11. Fill out an Accident/Incident Investigation Report while details are fresh on everyone's mind. Request witness statements. Make drawings or take photos of the scene as possible.

7.0 EVACUATION

Our primary concern is to first evacuate everyone potentially exposed to the danger resulting from an emergency event or situation and then attempt to control the source of danger.

In the case of a chemical release or spill, before instructing personnel to evacuate the site or meet at the designated Rally Point, the **Shift Team Leader or Incident Commander in Charge** shall determine the following:

- Nature, magnitude and wind direction of the chemical release to ensure the health and life of people moving toward or arriving to the Rally Point location will not be in jeopardy.

Upon the identification of an emergency situation or event the **non-essential people in the plant and office areas** will immediately evacuate plant upon announcing the order to evacuate and will be instructed to gather at the Rally Point for accountability, if wind direction does not put in jeopardy the health and life of people moving toward or arriving to the Rally Point location.

The **Rally Point Area #1** is located on the southwest side of the administration building lobby door. The **Rally Point #2** is located by the North Entrance Gate.

All people evacuating to the Rally Point locations will be accounted for by their respective **Team Leader or AES Contractor Coordinator. Each Team Leader** will ensure that their area people are accounted for. Each person should ensure that they are accounted for to avoid unnecessary searches that could place other people at risk. The Human Resource Coordinator, Office Manager or Maintenance Assistance Administrator and Security Officer on duty will provide documentation related to people present at the site to the Incident Commander or Safety Team Leader as part of ensuring an accurate headcount.

Operational on-duty shift team will remain to place the plant in a safe condition. The goal is to place the plant in the safest condition as possible taking into consideration the severity of the plant emergency. Within his sound judgment, the **Shift Team Leader** should manage the safe operation of the power plant without exposing **Operators and Technicians** to unreasonable danger.

The **Shift Team Leader** will make the decision as to whether or not to evacuate the Control Room and/or other locations in the plant. If a shutdown of the plant is decided upon or has occurred, the following minimum conditions should be attained before a complete evacuation, if possible:

1. Turbine and generator shutdown: turbine on the turning gear.
2. MFT (Master Fuel Trip) on both boilers; boiler feed water via the Emergency Diesel Feed Water Pump to maintain some cooling to the boilers.
3. All non-essential systems shutdown. These would include: boiler feed pumps, Condensate pumps, PA/SA fans, fluidizing air blowers, circulating water pumps, etc.

Upon activation of the plant alarm (a verbal announcement over the announcing system), **all non-essential people** in the plant should evacuate by as direct a route as practical and in an orderly fashion to the Rally Point. The elevator should be **avoided** due to potential problems. **Non-AES people** shall be escorted by an AES person.

8.0 FIRE PREVENTION

FIRE ALARMS

All normal occupied AES Puerto Rico buildings are equipped with heat and smoke detector type fire alarms as required by NFPA and the local building codes. These alarms are monitored continuously by a Fire Systems Alarm Panel in the Control Room. They are inspected regularly by the local fire department, our insurance carrier, AES Puerto Rico employees and contractors hired to maintain the fire suppression and alarm systems.

If a fire alarm is activated the control room operators will dispatch a plant technician to investigate and report the cause of the alarm.

SPRINKLER SYSTEMS

All normal occupied office buildings and areas where there are fire hazards present have either wet or dry pipe sprinkler systems installed in accordance with NFPA standards and approved by the Insurance Carrier.

If it ever be necessary to turn off any portion of the sprinkler system, proceed as follow:

1. Notify the **Shift Team Leader**.
2. Notify the **local Fire Marshall and Insurance Carrier** if required. If the Fire Marshall can not be reached, notify the public dispatcher.

3. Keep sprinkler repair time to a minimum. Allow no cutting, welding or flammable materials in the affected areas.
4. To restore service, follow manufacturer recommended procedures to ensure that automatically activated systems will work properly if needed. When full pressure is realized, advice agencies listed in step 2.

FIRE EXTINGUISHERS

There are fire extinguishers placed appropriately throughout the facility for use by trained individuals. The extinguisher types and sizes should be suitable for the locations they are located in. Routine maintenance and inspections are coordinated by the **Safety Team Leader**.

HOUSEKEEPING

Good housekeeping practices should be followed to control accumulations of flammable and combustible waste materials, residues and combustible dust so that they do not contribute to a fire emergency. Contractor collection and disposal of oily rags, removal of flammable materials, garbage and adherence to AES Safety Procedures should be included as part of any contractors work scope and worker indoctrination. Designated smoking areas should be separate from any fire hazards.

Special housekeeping emphasis shall be taken in work areas where **combustible dust such as coal dust** could accumulates. NFPA 654 warns that a dust layer >1/32 of an inch accumulated on surface areas of at least 5 percent of a room's floor area presents a significant explosion hazard. 1/32 of an inch is like the width of dime coin or a paper clip.

Clean **combustible dust** residues at regular intervals. Use cleaning methods that do not generate dust clouds, if ignition sources are present such as watering and or approved vacuum. Only use vacuum cleaners approved for dust collection.

The accepted combustible dust housekeeping practices warns us that **blowing down of areas should be avoided**. If done improperly, blowing down can spread the accumulated layer and disperse it into the air (the exact opposite of what is intended) and could create a potential explosive dust environment.

8.1 GENERAL FIREFIGHTING PROCEDURES

a. Determine nature and extent of fire problem. Notify the Control Room, ext. 2244/2245/2404.

b. Control Room personnel will request information about the identification of the fire source such as chemical or material labels, electrical sources or equipment failure to determine specific response procedure.

c. In case that a chemical substance or material is the fire source, the 2012 Emergency Response Guidebook should be consulted to determine appropriate emergency response.

d. If outside assistance is required have the Control Room dial 911.

e. Activate emergency evacuation alarm.

f. Arrange for an AES person to meet emergency response vehicles at Security Officer Guardhouse to direct them to the scene of the emergency.

g. Have an AES person that is knowledgeable of the affected area assist the Fire Chief.

h. Organize remainder of on site people to secure the remainder of plant and assist the emergency units.

i. Notify Team Leaders and Plant Manager. They will initiate the emergency call list as needed.

FIGHTING SMALL FIRES

All fires can be very dangerous and life-threatening. Everyones safety should always be the primary concern when attempting to fight a fire.

Before deciding to fight a fire, be certain that:

- The fire is small and not spreading. A fire can double in size within two or three minutes.
- You have the proper fire extinguisher for what is burning.
- The fire won't block your exit if you can't control it. A good way to ensure this is to keep the exit at your back.
- You know your fire extinguisher works. Inspect extinguishers once a month for dents, leaks or other signs of damage. Assure the pressure is at the recommended level. On extinguishers equipped with a gauge, the needle should be in the green zone - not too high and not too low.
- You know how to use your fire extinguisher. There's not enough time to read instructions when a fire occurs.

How to Fight a Fire Safely:

- Always stand with an exit at your back.
- Stand several feet away from the fire, moving closer once the fire starts to diminish.
- Use a sweeping motion and aim at the base of the fire.

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- Stand several feet away from the fire, moving closer once the fire starts to diminish.
- Use a sweeping motion and aim at the base of the fire.

- If possible, use a "buddy system" to have someone back you up or call for help if something goes wrong.
- Be sure to watch the area for awhile to ensure it doesn't re-ignite.

Never Fight A Fire If:

- **The fire is spreading rapidly.** Only use a fire extinguisher when the fire is in its early stages. If the fire is already spreading quickly, evacuate and call the fire department.
- **You don't know what is burning.** Unless you know what is burning, you won't know what type of fire extinguisher to use. Even if you have an ABC extinguisher, there could be something that will explode or produce highly toxic smoke.
- **You don't have the proper fire extinguisher.** The wrong type of extinguisher can be dangerous or life-threatening.
- **There is too much smoke or you are at risk of inhaling smoke.** Seven out of ten fire-related deaths occur from breathing poisonous gases produced by the fire.

Any sort of fire will produce some amount of carbon monoxide, the most deadly gas produced by a fire. Materials such as wool, silk, nylon and some plastics can produce other highly toxic gases such as carbon dioxide, hydrogen cyanide, or hydrogen chloride. Beware - all of these can be fatal.

8.2 DANGERS ASSOCIATED WITH SPECIFIC TYPES OF FIRES

ELECTRICAL FIRES

For fires in electrical equipment such as switchgear, breakers, cable trays or motors:

- Notify the Control Room, if needed have them call 911.
- Request the equipment involved be shutdown and de-energized. Do not assume the equipment is completely de-energized until tested for voltage by a trained electrician.
- If there is heavy smoke, all responders approaching the fire should wear appropriate respiratory protection such as an SCBA.
- If the fire continues or is spreading use fire extinguishers suitable for electrical (Class C) fires such as CO_2, Dry Chemical or Halon extinguishers only.
- Do not contact the equipment with the extinguisher or any part of the body. The equipment may still be energized due to fire damage and shorted electrical components.

FIRES NEAR HIGH PRESSURE AND TEMPERATURE SYSTEMS

Fires near or against high pressure and temperature boiler pressure part or piping systems are extremely dangerous. Failure due to overheating or rapid cooling of the boiler or piping material could result in a sudden release of pressure. All efforts should be made to prevent these occurrences through routine housekeeping. In the event that this type of fire should occur:

- Notify the Control Room ext. 2244/2245/2404, if needed have them call 911.
- If there is heavy smoke appropriate respiratory protection should be worn.
- **Do not apply water or fire extinguishers** under any thermal insulation or directly onto any hot piping or boiler parts under pressure.
- For small fires attempt to remove the burning material away from the pressurized systems using gloved hands, long handled tools, fire axes, etc.
- Only after the burning material is moved away from the piping should an attempt to extinguish the fire be made.
- If the material cannot be moved or the fire is too big and out of control, if possible the affected systems should be isolated and depressurized at isolation points that can be accessed at a safe distance from the fire.
- Only after the affected systems have been depressurized, can fire extinguishing agents be applied directly onto hot piping systems.

OIL OR COMBUSTIBLE LIQUID FIRES

Combustible liquid fires can spread into bigger fires or increase in intensity if not handled properly. High pressure jet spray from a fire hose or extinguisher can cause the liquid to splatter and spread the fire. If a combustible liquid fire occurs:

- Notify the Control Room, ext. 2244/2245/2404, if needed have them call 911.
- In case that a chemical substance or material is the fire source, the 2008 Emergency Response Guidebook should be consulted to determine appropriate emergency response.
- If there is heavy smoke appropriate respiratory protection should be worn.
- Use an Aqueous Film Forming Fire Extinguisher (AFFF), or a fire hose nozzle set for a light mist. If these are not available, other types of Cass B rated fire extinguishers can be used.

8.3 PREVENTING COAL YARD FIRES

Spontaneous combustion has long been recognized as a fire hazard in stored coal. These fires usually begin as "hot spots" deep within the reserve of coal. The hot spots begin when coal absorbs oxygen from the air. Heat generated by oxidation then initiates the fire.

Such fires can be very stubborn to extinguish because of the amount of coal involved (often hundreds of tons) and the difficulty of getting to the seat of the problem. Moreover, coal in either the smoldering of flaming stage may produce copious amounts of methane and carbon monoxide gases. In addition to their toxicity, these gases are highly explosive in certain concentrations, and can further complicate efforts to fight this type of coal fire.

Even the most universal firefighting substance, water, cannot be used indiscriminately. Because of the remote possibility of a steam explosion, it is advisable that water be applied carefully and from a safe distance. Certain chemicals such as carbon dioxide or nitrogen may be used to mitigate fire effects inside of silos or enclosed coal handling equipment.

Huge quantities of coal are stored in silos, hoppers and open air stockpiles. How susceptible such stocks of coal are to fire from spontaneous combustion depends on a number of factors, from how new the coal is to how it is piled.

Special housekeeping emphasis shall be taken in work areas where **combustible dust such as coal dust** could accumulates. NFPA 654 warns that a dust layer >1/32 of an inch accumulated on surface areas of at least 5 percent of a room's floor area presents a significant explosion hazard. 1/32 of an inch is like the width of dime coin or a paper clip.

Clean **combustible dust** residues at regular intervals. Use cleaning methods that do not generate dust clouds, if ignition sources are present such as watering and or approved vacuum. Only use vacuum cleaners approved for dust collection.

The accepted combustible dust housekeeping practices warns us that **blowing down of areas should be avoided**. If done improperly, blowing down can spread the accumulated layer and disperse it into the air (the exact opposite of what is intended) and could create a potential explosive dust environment.

Recommendations:

- Air circulation within a coal pile should be restricted as it contributes to heating; compacting helps seal air out.
- Moisture in coal contributes to spontaneous heating because it assists the oxidation process. Coal having a high moisture content should be segregated and used as quickly as possible. Efforts should be made to keep stored coal from being exposed to moisture.

- Following the "first in, first out" rule of using stock reduces the chance for hot spots by helping preclude heat buildup for portions of stock which remain undisturbed for a long term.
- A high ambient temperature aids the spontaneous heating process.
- Use coal as quickly as practicable. The longer large coal piles are allowed to sit, the more time the spontaneous ignition process has to work.
- The shape and composition of open stockpiles can help prevent fires. Inactive coal storage piles should be packed in horizontal layers (opinions range from 1 1/2' to 3' high) which are then leveled by scraping and compacted by rolling. This method helps distribute the coal evenly and thus avoids breakage and segregation of fine coal. Segregation of coal particles by size should be strenuously avoided, as it may allow more air to enter the pile and subsequent heating of finer sizes.
- The height of the coal pile is also important. Limit unlayered, uncompacted high grade coal to a height of 15' (10' for low grade coal); maximum height is 26' for layered and packed coal.
- Properly inspect, test and maintain installed fire protection equipment.
- Maintain an updated pre-fire plan and encourage regular visits to coal facilities by the site or local emergency response force.

FIGHTING COAL YARD FIRES

- Notify the Control Room, ext. 2244/2245/2404, if needed have them call 911.
- If there is heavy smoke appropriate respiratory protection should be worn.
- If the fire is small, it is recommended that the burning portions of the coal stockpile be uncovered and segregated from the rest of the stockpile using heavy equipment.
- For large uncontrolled fires, the use of water should be avoided and material handling heavy euqipment personnel should be contacted or the local fire department should be contacted by the **Shift Team Leader, Team Leader, Manager or Plant Manager** as needed.

8.4 PROPANE TANK FARM

Propane is a colourless gas with a faint odour at high concentrations. Fuel grades contain mercaptans that give propane an unpleasant odour. Propane is an EXTREMELYFLAMMABLE GAS. It is a COMPRESSED GAS. It is also a simple asphyxiant, which means that it could replace the oxygen available for breathing. When there is fast evaporation of liquid propane from a cylinder, frostbite may occur. When subjected to fire, tanks, cylinders and tankers can rupture violently and project fragments. In its natural state, propane is a gas with a boiling point of -42°C (-44°F). One litre of liquid propane is equivalent to 270 litres of propane gas. In the event of a liquid propane leak, a large quantity of propane gas is produced

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in very little time. Because propane gas is denser than air, the propane spreads over the ground and follows the contours of the terrain until its temperature reaches the ambient temperature. This means that propane gas is not easily dispersed. Propane tends to form a dense cloud of gas in normal atmospheric conditions.

When propane is spilled in an enclosed space, the gas accumulates at the lowest points before slowly dispersing to fill the rest of the space. Propane-related risks are higher in an enclosed space because it can explode when exposed to an ignition source. It is also classified as a simple asphyxiant. The level of oxygen in an enclosed space must be higher than 19.5% for a person to remain conscious without experiencing symptoms of oxygen deprivation. Propane is slightly soluble in water (62 ppm at 25°C).

The CAS registry number for propane is 74-98-6. This number is assigned by the Chemical Abstracts Service in the United States; it is a unique identification number that is used by all countries.

PROPANE TANK FARM SITE DESCRIPTION

- Maximum amount of propane anticipated at any time within a calendar year:
- **60,000 gallons**
- Capacity of the largest propane vessel: **30,000 gallons each**
- Number of tanks: **2** tanks, **30,000 gallons each.**

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The CAS registry number for propane is 74-98-6. This number is assigned by the Chemical Abstracts Service in the United States; it is a unique identification number that is used by all countries.

PROPANE TANK FARM SITE DESCRIPTION

- Maximum amount of propane anticipated at any time within a calendar year:
- **60,000 gallons**
- Capacity of the largest propane vessel: **30,000 gallons each**
- Number of tanks: **2** tanks, **30,000 gallons each.**

in very little time. Because propane gas is denser than air, the propane spreads over the ground and follows the contours of the terrain until its temperature reaches the ambient temperature. This means that propane gas is not easily dispersed. Propane tends to form a dense cloud of gas in normal atmospheric conditions.

When propane is spilled in an enclosed space, the gas accumulates at the lowest points before slowly dispersing to fill the rest of the space.

Propane-related risks are higher in an enclosed space because it can explode when exposed to an ignition source. It is also classified as a simple asphyxiant. The level of oxygen in an enclosed space must be higher than 19.5% for a person to remain conscious without experiencing symptoms of oxygen deprivation. Propane is slightly soluble in water (62 ppm at 25°C).

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- Number of buildings near the Propane tank farm: Propane tank farm is located southwest of the limestone preparation buidling and south east from the main warehouse buidling. Also, an Oil Fuel #2/diesel tank farm with 158,000 gallons storage capacity is located east of the Propane Tank Farm.

PROCEDURE IN THE EVENT OF A PROPANE LEAK OR SPILL

Gas can start leaking at any time of the day or night. The employee who detects a leak must notify the **Shift Team Leader (STL)** as soon as possible. As soon as a gas leak is detected:

1. Shut off the gas flow to the leak but do not put yourself in danger;
2. Keep unauthorized people away;
3. Call 911 and report the incident to the fire department, depending on how serious the leak is;
4. Inform citizens who may be affected by the event;
5. Notify **Environment Quality Board** and the concerned emergency response authorities;
6. Evacuate the area until nobody is exposed to gas fumes, or as directed by the **STL or Incident Commander** and the fire department;
7. Prevent gas from entering sewers, basements and low confined spaces since propane fumes are heavier than air and will spread at ground level until they collect in a low spot or in a confined space;
8. Ensure that the area around the leak is well ventilated to prevent fumes from concentrating to the point where they become explosive;

9. Eliminate all possible ignition sources, including those that are not normally considered a risk;

10. For **major leaks**:

    a) Please, refer to **section 15.2 List of Hazardous Materials Used at AES Puerto Rico Site with ERG Guide Numbers Guide #115** for Propane incident emergency response details on page # 92 of this Emergency Response Plan.

    b) For competent and trained fire fighters, they should **spray a fine mist with a hose** as an effective mean for dispersing propane fumes. Depending on the outdoor temperature, the source of the leak may be located by **observing a white cloud or haze, or listening for a hissing sound.** A leak of liquid propane is visible as a whitish cloud, and often causes frost or ice to form nearby. Because of the intense cold, never apply water at the leak or near safety devices as spraying water may cause ice to form an obstruction;

    b) If you do not have the proper equipment or if your personnel has not been properly trained,immediately evacuate the area.

11. Refer to the safety data sheet (SDS) for propane for more details located in the Contorl Room, Warehouse or Administration Building Lobby SDS binders.

12. Coordinate the response in cooperation with the **fire department and EMPIRE GAS Company.**

PROCEDURE IN THE EVENT OF AN IGNITED PROPANE LEAK

1. The Shift Team leader or his designated proceeds to call 911 to notify the fire department and other emergency response government authorities about the ignited propane leak event.
2. Evacuate the area exposed to fumes as directed by the Incident Commander and the fire department perosnnel.
3. Inform citizens who may be affected by the event;
4. Keep unauthorized persons away.

FIRST, STOP THE LEAK AND THEN FIGHT THE FIRE.

5. Do not try to put out the fire unless the fuel feed is shut off. Otherwise, the fuel could explode and start burning again. If you must get close to the tank to shut off the gas, always approach from the side, never from the ends.
6. <u>If flames are touching the tank</u>, EVACUATE THE AREA IMMEDIATELY.
7. If the tank is exposed to heat but is not in direct contact with flames:
   a) **<u>ONLY for competent and training fire fighters with proper equipment</u>**,
   spray water uniformly over the tank to cool it and reduce the pressure inside. If not enough water is available to cool down the tank, **watch it carefully to observe if the fire gets bigger and the pressure relief valve is hissing louder. THIS IS THE SIGNAL TO EVACUATE THE AREA IMMEDIATELY.**

b) If you do not have the proper equipment or if your personnel has not been properly trained, immediately evacuate the area.

PROCEDURE IN THE EVENT OF A PROPANE RUPTURED HOSE

Assessment of the situation:

1. Evidence of a leak

- Visible propane cloud
- Liquid propane puddle
- Sound of leaking gas
- Activation of the remote emergency switch

2. Emergency communications – do these things first

- The Shift Team leader or his designated proceeds to call 911 to notify the fire department and other emergency response government authorities about the ignited propane leak event.
- Alert employees
- Alert the propane supplier (Empire Gas)

3. Goals of the response

- Rescue
- Control vapours/liquids
- Evacuate
- Ventilate the area
- Eliminate ignition sources
- Contain hazards

4. Contain hazards – liquid propane

- Shut off supply
- Dispenser nozzle
- Remote controller
- Main valve
- Shut off the vehicle's fuel supply
- Contain liquid propane to prevent it from entering into sanitary and storm sewers, low points, etc.
- If it can be done safely, spray water to dissipate liquid and contain vapors.
- Spray water mist to dissipate vapors.
- Cover sewers inlets that could be exposed.

5. Mitigate Propane vapor hazards

- Shut off the supply source
- Spray water mist to dissipate vapors and move them away from buildings, vehicles and ignition sources
- Control and plug leaks
- Eliminate gas from the area

7. Perform a post-incident analysis

An analysis must be performed immediately after the incident, and all responding parties must take part in drafting the report.

9.0 CHEMICAL RELEASE RESPONSE

TABLE PREDICTED CONDITIONS OF POTENTIAL CHEMICAL RELEASES			
Potential Spill Source	**Direction of Spilled Material**	**Rate of Flow**	**Quantity that could be Discharged**
AES-PR			
1) Failure in the **150,000 gallons AST** used for initial firing of the boilers	To the concrete dike that provides service to this tank. The holding capacity of this dike is about 225,000 gallons, sufficient to contain the contents of this tank. If the failure occurs at the tank truck during delivery, the oil will be contained within the concrete pad in the unloading area which is designed with a ramp and a trench with a holding capacity of about 15,000 gallons.	5 gpm estimated pumping rate.	None - this release would remain contained on site either in the secondary containment or the stormwater collection ponds.
2) Failure in the **Sulfuric Acid or 1) Sodium Hydroxide (caustic) Tank 5,500 gallons**	To the concrete containment dike that provides service to these tanks. The dike is sized to contain the contents of these tanks. If the failure occurs at the tank truck during delivery, the chemical will be spilled to the ground and driveway in the vicinity of the storage tanks. The storm water drainage in these areas diverts flow to the on-site storm water collection pond.		None - this release would remain contained on site either in the secondary containment or the stormwater collection ponds.
3) Failure of the **Chlorine Dioxide Gas System**	The chlorine dioxide would be released to air and disperse in the direction of the prevailing winds.	0.29 pounds per minute	Less than 1 pounds to air.

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9.1 CHEMICAL RELEASE SAFETY PRECAUTIONS

APPROACH CAUTIOUSLY FROM UPWIND. Resist the urge to rush in; others cannot be helped until the situation has been fully assessed.

SECURE THE SCENE. Without entering the immediate hazard area, isolate the area and assure the safety of people and the environment, keep people away from the scene and outside the safety perimeter. Allow enough room to move and remove your own equipment.

IDENTIFY THE HAZARDS. Obtain copy of the **2012 Emergency Response Guidebook** to determine intial steps of the chemical release response incident or refer to **Section 15 HAZMAT EMERGENCY RESPONSE GUIDELINES** included in this Plan. Placards, container labels, shipping documents, material safety data sheets and Road Trailer Identification Charts, and/or knowledgeable persons on the scene are valuable information sources. Evaluate all available information and consult the recommended guide to reduce immediate risks. Additional information, provided by the shipper or obtained from another authoritative source, may change some of the emphasis or details found in the guide. Remember, the guide provides only the most important and worst case scenario information for the initial response in relation to a family or class of dangerous goods. As more material-specific information becomes available, the response should be tailored to the situation.

ASSESS THE SITUATION. Consider the following:

- Is there a fire, a spill or a leak?
- What are the weather conditions?

- What is the terrain like?
- Who/what is at risk: people, property or the environment?
- What actions should be taken: Is an evacuation necessary?
- Is diking necessary? What resources (human and equipment) are required and are readily available?
- What can be done immediately?

OBTAIN HELP. Notify responsible agencies and call for assistance from qualified personnel.

DECIDE ON SITE ENTRY. Any efforts made to rescue persons, protect property or the environment must be weighed against the possibility that you could become part of the problem. Enter the area only when wearing appropriate protective gear.

RESPOND. Respond in an appropriate manner. Establish a command post and lines of communication. Rescue casualties where possible and evacuate if necessary. Maintain control of the site. Continually reassess the situation and modify the response accordingly. The first duty is to consider the safety of people in the immediate area, including your own.

ABOVE ALL-Do not walk into or touch spilled material. Avoid inhalation of fumes, smoke and vapors, even if no dangerous goods are known to be involved. Do not assume that gases or vapors are harmless because of lack of a smell - odorless gases or vapors may be harmful. Use **CAUTION** when handling empty containers because they may still present hazards until they are cleaned and purged of all residues.

9.2 SPILL RESPONSE PROCEDURES

1. Discovery

The person(s) causing or discovering an accidental spill or gas release should immediately notify the Control Room. The following information should be reported:

a. the material spilled

b. location of the spill

c. quantity spilled and whether the spill has been stopped

d. whether anyone is injured or contaminated

e. whether the material has left AES Puerto Rico property

At no time is anyone expected to risk injury or contamination to stop or prevent a spill. The person(s) discovering the spill should stay upwind and at a safe distance to avoid inhalation or personal contamination by mists or fumes. Only persons trained and familiar with the systems, chemical and equipment should operate any portion of the equipment.

2. Initial Response

The Control Room Operators should ensure that everyone on site is notified that an emergency is in progress by passing the word on the radio and the plant paging system. Everyone not involved should stay away and upwind of the spill. All hot work and confined space entry permits will be cancelled. The plant Team Leaders and Managers should be notified.

The on-shift trained Hazwopper Incident Responder Plant Operators and Technicians will support the Shift Team Leader on Duty with the intial response to the emergency event. A determination of whether federal and local authorities need to be notified should be made based on the material spilled, quantity, applicable regulations and whether it is leaving the plant site or threatening the public.

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An Incident Command Post (ICP) needs to be established away from the incident hot spot location. The ICP shall be the location where the Incident Commander (IC) and the Incident Command Staff shall meet to establish the Incident Command System (ICS) to manage the incident response according to the objectives, strategies and priorities identified.

The shift emergency response team should be assembled at an area away from the spill. A preliminary job briefing should be conducted with the goal of assessing the situation, hazards involved, magnitude of the problem and whether outside help is required.

The Incident Commnader with the assistance of the Incident Command Staff shall establish the procedures and methods to control the access to the incident "hot" zone. They need to establish the emergency response work zones to control access of unathorized personnel. The following work zones shall be established:

- **Exclusion Zone:** Location where the spill or release occurred.
- **Contamination Reduction (DECON) Zone:** Location where the decontamination of emergency responders and equipment takes place; a decontamination corridor shall be established.
- **Support Zone:** An uncontaminated area where personnel shall not be exposed to the contaminants. The Support Zone shall be the location where stand-by emergency responders are ready to back up the responders inside the Exclusion Zone. The Support Zone shall have designated access control points.
- **Base:** Location where all emergency equipment and material avalilable on site is storaged and they are ready to be dispatched.
- **Distribution Center (Centro de Acopio):** Location where the emergency responders get and don the emergency equipment to be ready to respond to the incident.

- **Campsite:** Location where break rest tents, restrooms, food, water and other daily supplies are available for the personnel.

The **2012 Emergency Response Guidebook** shall be consulted to determine intial steps of the chemical release response incident or refer to **Section 15 HAZMAT EMERGENCY RESPONSE GUIDELINES.**

3. Initial Entry

Appropriate personal protective equipment (PPE) including SCBA's if warranted will be worn by everyone assigned to approach the spill.
The buddy system will be used by everyone entering the area of a spill or gas release. The reason for the buddy system is so that rapid assistance can be provided in the event of an emergency.

Upon initial entry, representative air monitoring shall be conducted to identify any dangerous condition such as the presence of a flammable atmosphere or oxygen-deficient environments.

The purpose of the initial entry is to provide a more detailed evaluation of the situation by qualified persons in order to further identify existing site hazards and to further aid in the selection of the appropriate engineering controls and personal protective equipment for the tasks to be performed.

4. Containment and Spill Clean-up

Engineering controls, work practices, personal protective equipment, or a combination of these shall be implemented to protect everyone from exposure to hazardous substances and safety and health hazards.
Only properly trained people with appropriate PPE will be allowed to participate. If it is decided to utilize a HAZMAT spill clean-up contractor, only the previously approved contractors will be called upon. If the situation requires the participation of federal and local authorities the Plant

Manager or his designee will represent AES' interest in meetings with the authorities.

All the waste materials will be stored on site in properly labeled containers of a compatible material until a determination is made for proper disposal.

5. Termination and Follow-up

A spill incident will not be considered terminated until the spill has been cleaned-up and properly contained in chemically compatible containers so that there is no risk of an off-site release or risk of exposure to people .

After the clean-up an Incident Report will be initiated by the persons involved. The appropriate environmental reports will be completed by the **Shift Team Leader/Incident Commander (IC)**.

10.0 SEVERE WEATHER AND AIR EMERGENCIES PLAN

10.1 AIR EMERGENCIES PLAN

The Puerto Rico Environmental Quality Board is responsible for monitoring the ambient air quality and publicly announcing the existance of:

- Air pollution alerts
- Air pollution warning
- Air pollution emergency
- Termination of the episode

In the event an episode is announced that affects the Guayama, Jobos and/or Pozuelo areas, AES-PR will take the following actions:

- Notification to the President, Team Leaders, Environmental Affairs Administrator, Safety Team Leader and the operations staff
- For an SO2 episode, the following actions will be taken:
    - The Diesel engines will not be operated unless needed for an emergency that represent a reduction of 0.42 lb/hr
    - Mobile heavy equipment operation will be restricted to the extent that will not affect the safe and reliable operation of the facility.
    - Additional scrubbing for So2 emissions from the CFB boilers will be conducted to the extend that is practicable.

- The facility wil not be shut-down unless specially ordered by the EQB and coordinated with the Puerto Rico Electric Power Authority's dispatch control center following agency air emergency response plan. A shutdown will create a power interruption that requires the increase the power generation by plants with higher emissions and start the operation of diesel emergency plants increasing the emissionsand risks.

- For an ambient Particulates episode, the following actions will be taken:
  - The Diesel engines will not be operated unless needed for an emergency that represent a reduction of 1 lb/hr
  - Mobile heavy equipment operation will be restricted to the extent that will not affect the safe and reliable operation of the facility.
  - Operationof the material handling equipment will be restricted to the extend that will not affect the safe and reliable operation of the facility.
  - The facility wil not be shut-down unless specially ordered by the EQB and coordinated with the Puerto Rico Electric Power Authority's dispatch control center following agency air emergency response plan. A shutdown will create a power interruption that requires the increase the power generation by plants with higher emissions and start the operation of diesel emergency plants increasing the emissionsand risks.

10.2 SEVERE WHEATHER OR ATMOSPHERIC DISTURBANCE EMERGENCY PROCEDURE

This plan is a guide for the preparation, staffing and communications in advance of and during hurricanes and severe weather which affect our facilities. This includes administrative and operational preventive measures which will be in effect in different areas of the plant to safeguard life, property and to operate the generating units as required by **PREPA.** Guides in this Procedure have been coordinates with the Guayama Municipality Emergency Management Center and the Puerto Rico Electric Power Authority Operations Division.

A Hurricane Procedures document was prepared as a guideline for seasonal preparations and hurricane warnings and alert preparations. All the Pre-season Preparations (before June 1st) should be adhered to at all times. If it appears that a severe hurricane will affect the Guayama, PR area, the various stages of the plan will be implemented including a shut down of all or most of the plant in accordance with instructions from PREPA. Only critical items will be kept operating. Since hurricanes are very erratic in nature, the plant will not be shut down unless instructed to do so.

Hurricane Categories

CATEGORY	WIND SPEED	OCEAN SURGE
Tropical Depression	Up to 38 mph	----------
Tropical Storm	39-73 mph	----------
Hurricane Category 1	74-95 mph	4-5 feet
Hurricane Category 2	96-110 mph	6-8
Hurricane Category 3	111-130 mph	9-12
Hurricane Category 4	131-155 mph	12-18
Hurricane Category 5	156 mph +	19 feet +

General Information

Hurricane season in the Caribbean officially begins the first of June and extends through November 30. Puerto Rico Emergency Response Agency and National Weather Center are our sources of hurricane information. All pre-season preparation shall be completed by June 1 each year.

Advisory:

Hurricanes and storm information is disseminated to the public every six hour.

Special Advisory:

Hurricanes and storm information is disseminated when there is significant chance in storm-related weather conditions.

Gale Warning:

Sustained winds of 39 – 54 mph and strong wave action are expected.

Storm Warning:

Sustained winds of 55 – 73 mph and strong wave action are expected.

Hurricane Watch:

A Hurricane may threaten and could affect the Island of Puerto Rico in the next 48 hrs. **AES** Business people should remain informed of the situation, inventory the supplies and be prepared to take rapid action in case of a **Hurricane Warning.**

Hurricane Warning:

A hurricane is expected to strike within 24 hours or less, with sustained winds of 74 mph or more and dangerously high water and waves. All preparations should be finished and in place.

PROCEDURES

STAGE 1 PRE-SEASON
(before June 1)

- Prepare a list of possible suppliers.
- Verify availability of all supplies/material necessary for personal, equipment, and property protection.
- Keep Plant free of loose material and Plant drainage system in good condition.
- Verify that all hurricane supplies and emergency handling equipment are safely stored.
- Verify that all vehicles are in good condition and that there is a safe place to store them during the emergency.
- Prepare a Manning Roster with the names of volunteers that will report to the plant during the emergency.
- Prepare a Support Roster with the names of volunteers that will help the peoplein the Manning Roster prepare for the emergency.
- Establish a telephone extension with live/recorded information regarding the emergency and plant status.

STAGE 2 48-36 hrs before landfall

- The PLANT MANAGER or his designee will call a meeting of the Hurricane Committee. The Committee will initiate coordination meeting and issue periodic bulletins as appropriate.
- Purchase non-perishable food items for the volunteers. Purchase food for 5 days.
- The Committee will review the nature of the emergency and the status of preparedness of each area as per checklists included as ATTACHMENT.
- Confirm hurricane duty volunteers and finalize Manning Roster.
- Contractors with equipment in the plant/dock facilities will be notified to prepare or remove their equipment before the final alert stage.
- Verify fuel oil tank is filled.
- Verify all coal silos, limestone hoppers, and fuel oil tank are filled.

STAGE 3 36-24 hrs before landfall

- The Committee will meet no later than 36 hrs (-36h) before predicted landfall (0h) and determine the need for implementing STAGE 3, or otherwise dismiss activities of committee.
- The Committee will review Plant emergency preparedness status and the degree of completion.

- Verify that plant vehicles and heavy equipment fuel tanks are topped off.
- Fill all plant potable water containers.
- Inside office spaces, safeguard all documents against water damage by securing them in filing cabinets and desks and raise them to prevent flood damage.
- Make adjustments/cancellations as necessary for all shipping traffic.
- Install storm shutters on designated buildings if not already done.
- Stage and secure plant vehicles and heavy equipment as appropriate.
- Coordinate with Coast Guard and Port Authority for port activities and dock closure.
- Activate Support Team, coordinate necessary support for Emergency Volunteer members.

STAGE 4 Final Alert 24-0 hrs before landfall

- Based on available information, no later than 24 hrs (-24h) before predicted landfall (0h), the Committee will decide the need to implement Stage 4 or otherwise dismiss activities of Committee.
- Release of non-essential personnel. Hurricane Duty Crew (volunteers) will be notified to be ready for pick up 8 hrs (-8h) before predicted landfall (0h).
- Volunteers should, with the help of the Support Team, finalize all family preparations early in this Stage.
- Make any final inventory adjustments as needed.
- Finalize movement of misc. equipment and hurricane supplies to Control Room.
- Coordinate with PREPA all procedures to follow.
- Verify all coal silos, limestone hoppers, water tanks and fuel oil tank are filled.

STAGE 5 During the hurricane

- Personnel will be kept informed about the status of the atmospheric disturbance by radio bulletins.
- Facility generation will be maintained as stable as possible. Avoid unsafe operations that may cause personal injury or equipment damage.
- Maintain contact with PREPA during the duration of the emergency. PREPA
  will inform of any load changes or issue shutdown orders.
- If necessary, AES will request the assistance of Municipal Emergency Management Agency, Municipal Fire Dept. and/or State/Municipal Police.

STAGE 6 After the hurricane

- Visually inspect the surrounding area for damages. Be careful of any loose or falling material. Inspect for leaks or any hazardous material release.
- Verify facility operational conditions and equipment in general.
- Proceed to inventory all damages and generate appropriate work orders.
- Replace any emergency equipment/supply that may have been used in preparation for future use.
- All personnel off-site will contact ext. 2244/2245/2404 for information regarding status of emergency and recall to work. Also tune Radio Hoy for radio bulletins.
- A report will be filed, detailing events during the emergency, any damages that occurred, costs involved and actions being taken.
- Return to work will be coordinated at the earliest possible convenience and according to facility needs.

CHECK LIST

Water Treatment Hurricane Contingency Plan Check List

1) Cooling tower fans and structure need to be secured.
2) Cooling tower chemicals Spectrum NX1100 and Spectrum BD 1501 Dispersant need to be tied in front of service water pumps.
3) Purate and Sulfuric Acid totes located on Water Treatment Chlorine Dioxide Station building need to secured.
4) Make sure the following tanks or container are full enough to withstand hurricane winds:
    a. **Clarifier Tank**
    b. **Monoscour Tank**
    c. **Clearwell Tank**
    d. **Filter Water Tank**
    e. **CST Tank A & B**
    f. **Sulfuric Acid Tank**
    g. **Caustic Tank**
    h. **Dispersant Tank**
    i. **Soda Ash Silo**
    j. **Magnesium Silo**
    k. **Ash Wetting Tank**
5) Make sure to check chemical bins at east side power block area.
6) Clean Oil separator with vacuum truck on time.
7) Secure Patillas Canal flow.

8) Secure Wells PS1 Station pumps fiberglass green container.
9) Secure extractors fans at WTB.
10) Make sure Storm Water Pond Pumps work properly.
11) Remove as much water from Storm water pond to the 18mm pond.
12) Make sure we comply with ***EPA*** Requirements sampling and permits in case we need to overflow the Storm water pond.
13) Secure ***PRASA*** pumps to 18mm pond as indicated.
14) Turn off aerators at 18mm pond and secured.
15) Secure ***PRASA Air*** compressor.
16) Secure ***PRASA MCC Doors***.

Material Handling Hurricane Contingency Plan Check List

1) Dock

- Secure in position unloading hopper tower, loading hopper tower & arm and gangway platform.
- Clean areas of trash and debris.
- Verify windows and doors be locked.
- Is a ship is on the dock need to be offshore 8 hours before the hurricane hit.
- Secure siding and roof with steel wire for prevent flying objects.
- Cut off power of the area.

2) Transfer conveyor & electrical buildings

- Secure conveyor cover and doors are locked.
- Any loose parts need to be removed.
- Tighten siding and roofs section with steel cable when is possible.
- Seal coal pile & 30 days storage with a vibratory roller to avoid winds blows material.
- Verify transformers by off and be line and be covered with tarp in case of rain enter on the room.
- Secure doors and windows on electrical rooms.
- Cut off power on the area.

3) Limestone dome & Limestone preparation building

- Secured doors and windows need to be locked.
- Limestone preparation building propane lines need to be flushed and empty.
- Propane gas tank needs to be secure on ground.
- Dust collector needs to be closed and secure aluminum panels.
- Secure burners and internal conveyor system with steel cable inside the limestone prep.
- Cut off power of the area.

4) **Heavy equipment & utilities**

- Secure mechanical equipment on a safe ground and closer area.
- Secure trucks and wheel equipment inside the building.
- Secure Diesel tank to the ground.
- Secure tools and lubricants on a dry area.
- Verify material handling areas for debris garbage that can not withhold hurricane winds.
- All the equipment needs to have a full check of maintenance. (Diesel, gasoline and oil).
- Make a list of the personnel who lives closer to the plant and make a working schedule and stand-by schedule in case of emergency.

Hurricane Supply List

Items	Quantity
Satellite phone	1
Waters Cans (for 5 days)	# persons
Light Towers	3
Working Gloves	4 doz.
Disposable Sheets	50
Two Cell Flash Lights	15
Rain Coats	24
Roll of ½ inch Nylon Rope	13
Roll of ½ White Sisal Rope	3
Roll # 14 Galvanized Wire	2
Roll Yellow ***Caution Chemical Spill*** Plastic	1
Rubber Spt Tape	5
50 ft Extension Cord	3
Floor Fans	3
Rubber Boots	10
Food	*for 5 days
Batteries	
Radio	
Matches	
Paper towels	
Dishwashing liquid	
Disposable dishes, cooffe cups, forks and spoons	

***FOODS:**

Soup
Chicken sausages
Spam Ham
Tuna Fish
Bread
Crackers
Evaporated Milk
Coffee
Chocolate

Sugar
Jelly
Corn Flakes
Rice
Beans
Oil
Salt
Butter
Spread Ham

The **Plant Manager, Managers and Team Leaders** will carefully follow the course of the hurricane to determine the implementation of the various phases of hurricane preparedness and to allow time for people to go home before the weather or roads get too bad to travel. Everyone will be expected to report for work on their normal shift unless advised otherwise as part of the hurricane procedures. **The emergency contact number list must be reviewed and updated at least annually by the Safety Team Leader.**

HIGH WINDS

In the event of exceptionally high wind velocity (in excess of 55 MPH), the following operation needs to be performed:

1. If time permits, run the conveyors free of all materials.
2. Shut the conveyor systems down.
3. When the wind subsides, make a visual inspection of the conveyors and make sure they are intact. Make this inspection from ground level. You do not need to walk the elevated walkways.
4. If everything is in order, put the conveyors back in operation.
5. Make another visual inspection after the systems are loaded to be sure they are not damaged and spilling materials.
6. If time does not permit running the conveyors empty of materials, just shut them down and leave them loaded. Be sure to visually inspect them before and after restarting.

FLOODING / TORRENTIAL RAINS

A Storm Water Pollution Prevention Plan (SWPPP) has been prepared and implemented for the facility. This plan addresses the maintenance and monthly inspection requirements of the storm water runoff conveyance systems for both on and off-site. The **Water Treatment Team Leader** is responsible for the cleaning and upkeep of the site's storm water runoff ponds. These pond levels should be kept as low as reasonably possible to prevent overflow situations.

11.0 EARTHQUAKES & TSUNAMIS

What to Do During an Earthquake

Stay as safe as possible during an earthquake. Be aware that some earthquakes are actually foreshocks and a larger earthquake might occur. Minimize your movements to a few steps to a nearby safe place and stay indoors until the shaking has stopped and you are sure exiting is safe.

If indoors

- **DROP** to the ground; take **COVER** by getting under a sturdy table or other piece of furniture; and **HOLD ON** on until the shaking stops. If there isn't a table or desk near you, cover your face and head with your arms and crouch in an inside corner of the building.
- Stay away from glass, windows, outside doors and walls, and anything that could fall, such as lighting fixtures or furniture.
- Stay in bed if you are there when the earthquake strikes. Hold on and protect your head with a pillow, unless you are under a heavy light fixture that could fall. In that case, move to the nearest safe place.
- Use a doorway for shelter only if it is in close proximity to you and if you know it is a strongly supported, load bearing doorway.
- Stay inside until shaking stops and it is safe to go outside. Research has shown that most injuries occur when people inside buildings attempt to move to a different location inside the building or try to leave.

- Be aware that the electricity may go out or the sprinkler systems or fire alarms may turn on.
- DO NOT use the elevators.

If outdoors

- Stay there.
- Move away from buildings, streetlights, and utility wires.
- Once in the open, stay there until the shaking stops. The greatest danger exists directly outside buildings, at exits, and alongside exterior walls. Many of the 120 fatalities from the 1933 Long Beach earthquake occurred when people ran outside of buildings only to be killed by falling debris from collapsing walls. Ground movement during an earthquake is seldom the direct cause of death or injury. Most earthquake-related casualties result from collapsing walls, flying glass, and falling objects.

If in a moving vehicle

- Stop as quickly as safety permits and stay in the vehicle. Avoid stopping near or under buildings, trees, overpasses, and utility wires.
- Proceed cautiously once the earthquake has stopped. Avoid roads, bridges, or ramps that might have been damaged by the earthquake.

If trapped under debris

- Do not light a match.
- Do not move about or kick up dust.
- Cover your mouth with a handkerchief or clothing.

- Tap on a pipe or wall so rescuers can locate you. Use a whistle if one is available. Shout only as a last resort. Shouting can cause you to inhale dangerous amounts of dust.

What to Do After an Earthquake

- **Expect aftershocks.** These secondary shockwaves are usually less violent than the main quake but can be strong enough to do additional damage to weakened structures and can occur in the first hours, days, weeks, or even months after the quake.
- **Listen to a battery-operated radio or television.** Listen for the latest emergency information.
- **Use the telephone only for emergency calls.**
- **Open cabinets cautiously.** Beware of objects that can fall off shelves.
- **Stay away from damaged areas.** Stay away unless your assistance has been specifically requested by police, fire, or relief organizations. Return home only when authorities say it is safe.
- **Be aware of possible tsunamis if you live in coastal areas.** These are also known as seismic sea waves (mistakenly called "tidal waves"). When local authorities issue a tsunami warning, assume that a series of dangerous waves is on the way. Stay away from the beach.
- **Help injured or trapped persons.** Remember to help your neighbors who may require special assistance such as infants, the elderly, and people with disabilities. Give first aid where appropriate. Do not move seriously injured persons unless they are in immediate danger of further injury. Call for help.
- **Clean up spilled medicines, bleaches, gasoline or other flammable liquids immediately.** Leave the area if you smell gas or fumes from other chemicals.
- **Inspect utilities.**
    - **Check for gas leaks.** If you smell gas or hear blowing or hissing noise, open a window and quickly leave the building. Turn off the gas at the outside main valve if you can and call the gas company from a neighbor's home. If you turn off the gas for any reason, it must be turned back on by a professional.

- **Look for electrical system damage.** If you see sparks or broken or frayed wires, or if you smell hot insulation, turn off the electricity at the main fuse box or circuit breaker. If you have to step in water to get to the fuse box or circuit breaker, call an electrician first for advice.

- **Check for sewage and water lines damage.** If you suspect sewage lines are damaged, avoid using the toilets and call a plumber. If water pipes are damaged, contact the water company and avoid using water from the tap. You can obtain safe water by melting ice cubes.

What to do Before and During a Tsunami

The following are guidelines for what you should do if a tsunami is likely in our area:

- **Turn on your radio** to learn if there is a tsunami warning if an earthquake occurs and you are in a coastal area.
- **Move inland to higher ground** immediately and stay there.
- **Stay away from the beach.** Never go down to the beach to watch a tsunami come in. If you can see the wave you are too close to escape it.
- **CAUTION - If there is noticeable recession in water away from the shoreline this is nature's tsunami warning and it should be heeded.** You should move away immediately.

What to Do After a Tsunami

The following are guidelines for the period following a tsunami:

- **Stay away from flooded and damaged areas** until officials say it is safe to return.
- **Stay away from debris in the water**; it may pose a safety hazard to boats and people.
- **Save yourself - not your possessions**

12.0 BOMB THREATS

Bomb threats are delivered in a variety of ways. The majority of threats are telephone called in to the target. Occasionally these calls are through a third party. Sometimes a threat is communicated in writing or by a recording. Two logical explanations for reporting a bomb threat are:

1. The caller has definite knowledge or believes that an explosive or incendiary bomb has been or will be placed and he/she wants to minimize personal injury or property damage. The caller may be the person who placed the device or someone who has become aware of such information.
2. The caller wants to create an atmosphere of anxiety and panic which will, in turn, result in a disruption of the normal activities at the facility where the device is purportedly placed. Whatever the reason for the report, there will certainly be a reaction to it. Through proper planning, the wide variety of potentially uncontrollable reactions can be greatly reduced.

BOMB DESCRIPTIONS

Bombs can be constructed to look like almost anything and can be placed or delivered in any number of ways. The probability of finding a bomb that looks like the stereotypical bomb is almost nonexistent. The only common denominator that exists among bombs is that they are designed or intended to explode.

Most bombs are homemade and are limited in their design only by the imagination and resources available to the bomber. If searching for a bomb, suspect anything that looks unusual. Let a trained bomb technician determine what is or is not a bomb.

The purpose of this bomb threat plan is to provide guidance and establish procedures for those people who may be required to take information concerning a bomb threat and/or help search for such a device. A copy of this procedure or a similar one should be readily available at the Security/Safety Offices, switchboard operator's desk and in the Control Room.

WRITTEN BOMB THREAT RESPONSE

If a written threat is received, save all materials, including any envelope or container. Once the message is recognized as a bomb threat, further unnecessary handling should be avoided. Every possible effort must be made to retain evidence such as fingerprints, handwriting or typewriting, paper, and postal marks. These will prove essential in tracing the threat and identifying the writer.

TELEPHONE BOMB THREAT RESPONSE

The individual receiving a bomb threat by phone, mail or any other method must obtain as much information as possible. If possible he/she will complete the questions listed below during the conversation with the caller. If a threat is received by telephone, DO NOT HANG UP. Ask the caller:

1. When will it explode? _____

2. Location of device? _____

3. Appearance of device? _____

4. Type of device? _____

5. What will cause it to explode? _____

6. Did you place the bomb? _____

7. Why? _____

8. What is your name and address? _____

9. Other pertinent data

a. Date and time of call _____

b. Exact wording of caller _____

_____

10. During the call, form an opinion of the caller's possible:

- Sex
- Age
- Race

Note the following:

- Caller's voice; calm, angry, excited, etc.
- Background noises; street sounds, office machines, plant equipment, laughter, music, etc.
- Language; well spoken, incoherent, was message read or taped, etc.
- Was caller's voice familiar?

Upon completion of the conversation notify the Control Room. The Control Room Technicians will then notify the Plant Manager and Team Leaders. The Emergency Response Coordinator should then begin the following:

THREAT ASSESSMENT - The assessment of a bomb threat is the responsibility of the Emergency Response Coordinator and the Plant Manager. As a guide, a threat may be assessed as potentially genuine under the following circumstances:

- Intelligence from police indicating that the threat may involve real bombs.
- A suspicious package or object is discovered.
- The caller gives specific locations and details.

Although having the Police Bomb Disposal Unit conduct a bomb search is the safest action to take, a drawback is that their search would be time consuming and would require evacuation of the affected area throughout the time period.

SEARCHES BY AES PEOPLE

If the threat is not considered to be real or does not specify an area threatened, the quickest and most effective way to conduct a search is to utilize the people most familiar with the facility and equipment. If it is decided that a search by AES people is necessary, alert everyone by an intercom message stating:

"Attention everyone! We have received a bomb threat. We need everyone's cooperation by commencing a search of their immediate or designated work area. Do not touch, attempt to move or disarm any suspicious objects. Team Leaders should coordinate the search of your areas. When a search of your area is complete, notify your Team Leader. All Team Leaders are to report information to the Control Room. DO NOT EVACUATE UNTIL DIRECTED."

It is imperative that personnel involved in a search be instructed that their only mission is to search for and report suspicious objects. **DO NOT TOUCH OR ATTEMPT TO DISARM SUSPICIOUS OBJECTS.**

WHAT TO LOOK FOR:

Packages

- Taped or tied heavily
- Brief case with no identification
- Any object or package which does not belong or looks unusual
- Anything unusual attached to a vessel or structure
- Unusual Mail
- Objects with wires visible
- Strange odors

WHAT TO DO IF A SUSPICIOUS OBJECT IS LOCATED

Under no circumstances should anyone move, jar or touch a suspicious object or anything attached to it. The removal or disarming of a bomb must be left to the professionals in explosive ordnance disposal. When a suspicious object is discovered, the following procedures are recommended:

1. **Do not use radios within 50 feet of any suspicious objects.**
2. Report the location and an accurate description of the object to the appropriate **Team Leader** verbally or by telephone. This information should be relayed immediately to the Control Room, which will, notify the police and fire departments, and rescue squad. These officers should be met and escorted to the scene.
3. **Identify the danger area, and block it off with a clear zone of at least 300 feet, including floors below and above the object.**

4. Check to see that all doors and windows are open to minimize primary damage from blast and secondary damage from fragmentation.
5. Evacuate the building.
6. If absolutely necessary, place sandbags or mattresses, never metal shields, around the suspicious object. Do not attempt to cover the object.

Do not permit reentry into the building or area until the device has been removed/disarmed by Police Bomb Disposal Experts.

BOMB THREAT HOAXES

All bomb threats should be taken seriously and reported to the police. If the person initiating the threat does not receive the desired response his next action may involve a real bomb or act of violence.

Although it is important that bomb threats be reported to the local agencies, a request should be made to them that the situations be treated as confidentially as possible to prevent copycats. It is of paramount importance that all inquiries from the news media be directed to the Plant Manager or designate. All other persons should be instructed not to discuss the situation with outsiders, especially the news media.

13.0 WORKPLACE VIOLENCE

Workplace violence is any violent act or threat by or against workers. It can occur in or outside the workplace and can range from threats and verbal abuse to physical assault and homicide. Among the workers most at risk are workers who work alone or in small groups, work late night or early morning hours and in high crime areas.

PREVENTIVE MEASURES

- AES Puerto Rico has a zero tolerance of workplace violence by or against its employees or contractors.
- All employees and contractors are encouraged to report and log all suspicious behavior, incidents and threats.
- All claims of violent acts or threats will be investigated and remedied promptly.
- Workers having to go to outlying areas such as the Patillas Canal or the Shiploading Dock should use the buddy system and travel by vehicle to discourage personal assaults.

ACTIONS IN THE EVENT OF AN ASSAULT

- Provide prompt medical evaluation and treatment if an incident occurs.
- Report violent incidents to the local police promptly.
- Advise all victims of their legal right to prosecute any perpetrators of violent acts.

- Discuss the circumstances of the incident openly and encourage employees to share information about ways to avoid similar situations in the future.
- Offer stress debriefing sessions and post traumatic counseling services to help everyone recover from an incident.

14.0 INCIDENTS INVOLVING NEIGHBORING FACILITIES

In the event that an incident or accident on AES Puerto Rico property is threatening people or property on the neighboring facilities, they should be notified immediately. This can be done through a telephone call or in person as the situation requires.

The following numbers can be used to contact the neighboring facilities or local community emergency response departments:

EMERGENCY CALL LIST	
Agency/Organization	**Telephone Number**
1) a) Fire Department	(787)-864-2330
b) Police Department	(787)-864-2020 (787)-343-2020
c) Puerto Rico Emergency Management Agency- Guayama	(787) 864-1946
2) For incidents threatening the neighboring facilities:	
a) TAPI/TEVA Industries Security Guard	(787)-864-4545
d) Guayama Corectional Facility (Superintendent) Tactical Operations (U.O.T.)	(787) 866-2479 (Super.) (787) 864-6401 (U. O. T.)
e) Escuela Adela Brenes Texidor, Bo. Jobos;	787-866-6404 787-864-7700
f) Lilly del Caribe, Inc.	787-271-6710

EMERGENCY CALL LIST	
Agency/Organization	**Telephone Number**
g) Pfizer Consumer Healthcare	787-866-6224/ 380-7272
3) Other important telephone numbers that could be used by the Emergency Incident Commander depending on the situation:	
a) Environmental Quality Board (EQB)	
* Environmental Emergencies Office	(787)-766-2823 (787)-724-0124 (after normal working hours)
* Water Quality Area	(787)-751-1891
b) National Response Center (NRC)	1 (800) 424-8802
c) Local Emergency Planning Committee	(787)-864-0103

14.1 NEWS MEDIA RELATION PROTOCOL

It must be recognized that the press has a legitimate interest in plant emergencies that attract outside public interest. In such a situation, the press is our liaison with the public. It is to AES' benefit to cooperate with the news media in a reasonable way when a major emergency occurs. This is our best guarantee that the news will be factual and accurate and to prevent spreading of rumors. Improperly handled news media in time of major emergencies can destroy, in a few hours, all of the good press and public goodwill built up over a period of years.

RESPONSIBILITY - The **Plant Manager**, or his designated representative, will act as News Media Contact. **No other person is authorized to give information to the news media and such inquires must be directed to the Plant Manager or his designate.** Note: See News Media Handling During Off Hours.

PRESS RELEASE - All news media persons will be stopped at the security gate. They will not be allowed into the plant until the **Plant Manager** or his designate is present to escort them.

1. In emergencies that interest the news media, no reporters will be allowed to enter the plant at the time the actual emergency exists. The security guards should be instructed to notify the news media to stay outside of AES Puerto Rico property for safety reasons until invited and escorted by the Plant Manager or his designate.

2. All questions and inquiries should be referred to the Plant Manager or his designate.

3. The Plant Manager will clear a factual release as soon as possible. If the nature of the emergency does not permit such a release immediately, they should be advised that one will be issued shortly, if at all possible.

4. Press releases containing information on injured persons will not be made until the family of the person has been notified.

5. After the emergency subsides, the responsibility of admitting reporters and photographers to the scene will be that of the Plant Manager. If they are permitted to enter the plant, they must be issued hard hats, safety glasses, and other equipment as needed at the guard office and be escorted by an AES person.

NEWS MEDIA HANDLING DURING OFF HOUR EMERGENCIES It is the responsibility of the **Shift Team Leader** to act as temporary News Media Contact until the **Plant Manager or one of the designated alternates** arrives at the plant. The acting News Media Contact should make sure the Plant Manager or one of the alternates is notified that they are needed. In the event that members of the news media reach the plant before the Plant Manager or one of the alternates, they will be held outside the guard office and told:

"We have had an emergency. At the moment we do not know how serious. We will let you know as soon as additional information is available."

Do not leave the media people unattended. The same information will be given on telephone inquiries from the news media. Be sure to take the name and telephone number of the person making the inquiry and give this to the News Media Coordinator or alternate when he arrives.

GENERAL COMMENTS

RELEASE OF DETAILED INFORMATION - Questions should not be answered which may injure our Company's competitive position in the industry such as information on unannounced research, production figures, value of Company property dollar loss suffered, sales volume suffered, insurance coverage, etc. No questions will be answered anonymously.

THE FIRST RELEASE - The common tendency after a fire, explosion, etc., is to exaggerate the scope and extent of the emergency. Consequently, it is of the utmost importance to give out accurate information on the size of the emergency, even though the facts may still be limited, as soon as possible in order that the news media may give the proper information to the public.

NEWS MEDIA TOURS OF THE SCENE - The news media will probably want to visit the scene of the emergency. They may be permitted to do so if such visit can be made safely and does not delay correction of the emergency. The decision to allow the news media into the plant will be made by the **Plant Manager.**

If the emergency scene is close to a restricted or confidential operation which cannot be photographed, this fact should be made known to the visitors in advance and an understanding reached that they will not be allowed to enter or photograph such restricted areas.

As soon as a decision is reached for such a tour, the News Media Coordinator, or one of the alternates, should escort them to the area and stay with them the entire time they are inside the plant. An accurate list of all news media personnel who came to the plant, when they go to the scene, and when they leave, should be kept.

IDENTIFICATION OF INJURED AND AREAS INVOLVED - Efforts will be made as soon as possible to notify the families of any injured persons before releasing such names for publication. This same policy should apply to identifying the specific plant area or unit involved in the emergency since this also tends to identify who might be injured. This should be explained to the news media.

IMPORTANCE OF ATTITUDE TOWARDS NEWS MEDIA - It is impossible to plan in advance for every detail that may arise in an emergency. The most important help will be the attitude of plant people working with the news media. It is not wise to try to cover up the incident. It is regrettable, but not a disgrace, to have an emergency condition within the plant. To have one in print after it has been denied can be very embarrassing. Remember that the news media has free access to hospitals, the coroner, fire and police

departments, as well as AES people. They will get the news from someone, so seeing that they get it correctly is vital. The photographer will also get his pictures somehow.

METHOD OF GIVING OUT INFORMATION - The news media will not be content with using a formal statement that may be handed them. Therefore, we must be prepared to answer their questions for publication. It is not advisable to refuse to answer questions. This does not mean that only verbal statements should be given out, or that everybody should give out statements. To insure accuracy and assist the reporters when they write their stories, a prepared statement should be given along with suitable background material. A media briefing paper giving background and general plant information should be prepared in advance and up-dated periodically.

POINTS TO REMEMBER - In describing the emergency and what is taking place, there are several things that should be kept in mind:

1. Be careful how you describe the raw materials or finished products that are involved. We want the release to be factual and not exaggerated.
2. Place strong emphasis on the fact the emergency is, or was, being handled by trained people.
3. Be sure to point out the good safety record of the plant or mention performance when applicable.

4. If the news media insist on an "eye-witness account" of the emergency, a qualified witness should be made available for interview; however, he should be cautioned beforehand about speculating on causes of the emergency.

15.0 HAZMAT EMERGENCY RESPONSE GUIDELINES

15.1 2012 Emergency Response Guidebook (ERG)

In case of an emergency that involves the release of hazardous materials, fuels, oils or dangerous goods, first responders will use as a reference the **2012 Emergency Response Guidebook (ERG)** developed by the U.S. Department of Transportation (DOT). It is primarily a guide to aid first responders in quickly identifying the specific or generic hazards of the materials involved in the incident, and protecting themselves and the general public during the initial response phase of the incident.

Hard copies of the guideline are available in the Control Room, Water Treatment building and the Administration Building reception. Also, relevant 2012 ERG sections are incorporated in this Emergency Response Plan; please, refer to next Sections 15.2 and 15.3.

Other emergency response reference is the safety data sheets (SDS). The SDS inventories are located in the control room, administration building reception, and warehouse building. Also, SDS can be located in the respective chemical or product manufacturer's internet web sites available.

15.2 List of Hazardous Materials Used at AES Puerto Rico Site with ERG Guide Numbers

HAZARDOUS MATERIAL LIST –WITH EMERGENCY RESPONSE GUIDES

MATERIAL DESCRIPTION & LOCATION	GUIDE	ID #	CAS #
Acetylene –maintenance shop and warehouse	116	1001	
Ammonia 25%, solution- power block north east ground level	154	2672	7664-41-7
Coal- pile, conveyor, crusher building, silos, feeders, power block	133	133	
Diesel- South east near Agremax Pile	128	1993 2002	68476-68-6
Lime or Calcium Oxide, CaO-CDS/ESP silo	157	1910	1305-78-8
Limestone- Dome , LS Crusher Bldg, LS Feeders	157	157	1317-65-3
Lube Oil- Turbine ground and 2nd power block levels and Used Oil Storage Bldg	128	128	
Mercury- Light bulbs	172	2809	
Phosphoric Acid, H^2PO^{4-} Turbine Lab	154	1805	7664-38-2
Propane- Southeast behind Limestone Preparation Building	115	1075 1978	74-98-6
Purate® (Sodium Chlorate/ NaClO3 and Hydrogen Peroxide/2(HO) Solution - WT Chlorine Dioxide Station	140		
Soda Ash or Sodium Carbonate, Na^2CO^3- WT Bldg	140		497-19-8
Sodium Hydroxide or Caustic Soda NaOH – WT Bldg	154		1310-73-2
Sodium Bisulfite, WT Bldg	154	2837	7631-90-5
Sodium Hypochlorite 15% -WT Bldg	154		7681-52-9
Sodium Bromide- Cooling Tower Pump	141		7647-15-6
Sulfuric Acid, H^2PO^{4-} 98% WT Bldg and **Sulfuric Acid, H^2PO^{4-}** 70% WT Chlorine Dioxide Station	137	1830	7664-93-9
Urea- Power Block, south east Urea Tank and Warehouse Annex	140		57-13-6

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Lime or Calcium Oxide, CaO-CDS/ESP silo	157	1910	1305-78-8
Limestone- Dome - LS Crusher Bldg, LS Feeders	157	157	1317-65-3
Lube Oil- Turbine ground and 2nd power block levels and Used Oil Storage Bldg	128	128	
Mercury- Light bulbs	172	2809	
Phosphoric Acid, H^2PO^{4-} Turbine Lab	154	1805	7664-38-2
Propane- Southeast behind Limestone Preparation Building	115	1075 1978	74-98-6
Purate® (Sodium Chlorate/ NaClO3 and Hydrogen Peroxide/2(HO) Solution - WT Chlorine Dioxide Station	140		
Soda Ash or Sodium Carbonate, Na^2CO^3 WT Bldg	140		497-19-8
Sodium Hydroxide or Caustic Soda NaOH – WT Bldg	154		1310-73-2
Sodium Bisulfite, WT Bldg	154	2837	7631-90-5
Sodium Hypochlorite 15% -WT Bldg	154		7681-52-9
Sodium Bromide- Cooling Tower Pump	141		7647-15-6
Sulfuric Acid, H^2PO^{4-} 98% WT Bldg and **Sulfuric Acid, H^2PO^{4-}** 70% WT Chlorine Dioxide Station	137	1830	7664-93-9
Urea- Power Block, south east Urea Tank and Warehouse Annex	140		57-13-6

15.3 AES Puerto Rico Hazardous Material Emergency Response Guides

G113
FLAMMABLE SOLIDS
(wet desensitized explosives)

EMERGENCY RESPONSE

FIRE

CARGO Fires

- **DO NOT fight fire when fire reaches cargo! Cargo may EXPLODE!**
- Stop all traffic and clear the area for at least 800 meters (1/2 mile) in all directions and let burn.
- **Do not move cargo or vehicle if cargo has been exposed to heat.**

TIRE or VEHICLE Fires

- **Use plenty of water - FLOOD it! If water is not available, use CO2, dry chemical or dirt.**
- If possible, and WITHOUT RISK, use unmanned hose holders or monitor nozzles from maximum distance to prevent fire from spreading to cargo area.
- Pay special attention to tire fires as re-ignition may occur. Stand by with extinguisher ready.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material.

Small Spills

- Flush area with flooding quantities of water.

Large Spills

- Wet down with water and dike for later disposal.
- KEEP "WETTED" PRODUCT WET BY SLOWLY ADDING FLOODING QUANTITIES OF WATER.

FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.

· In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

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

PUBLIC SAFETY

· **CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**

· Isolate spill or leak area immediately for at least 100 meters (330 feet) in all directions.

· Keep unauthorized personnel away.

· Stay upwind.

· Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

· Wear positive pressure self-contained breathing apparatus (SCBA).

· Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

· **Consider initial evacuation for 500 meters (1/3 mile) in all directions.**

Fire

· 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.

POTENTIAL HAZARDS

FIRE OR EXPLOSION

· Flammable/combustible material.

· May be ignited by heat, sparks or flames.

· **DRIED OUT material may explode if exposed to heat, flame, friction or shock; Treat as an explosive (GUIDE 112).**

· **Keep material wet with water or treat as an explosive (GUIDE 112).**

· Runoff to sewer may create fire or explosion hazard.

HEALTH

· Some are toxic and may be fatal if inhaled, swallowed or absorbed through skin.

· Contact may cause burns to skin and eyes.

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

· Runoff from fire control or dilution water may cause pollution.

G 115
GASES FLAMMABLE
(including Refrigerated Liquids)

EMERGENCY RESPONSE

FIRE

· DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.

CAUTION: Hydrogen (UN1049) and Deuterium (UN1957) burn with an invisible flame.

Small Fires

· Dry chemical or CO2.

Large Fires

· Water spray or fog.

· Move containers from fire area if you can do it without risk.

Fire involving Tanks

· Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.

· Cool containers with flooding quantities of water until well after fire is out.

· Do not direct water at source of leak or safety devices; icing may occur.

· Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.

· ALWAYS stay away from tanks engulfed in fire.

· For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

· ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).

· All equipment used when handling the product must be grounded.

· Do not touch or walk through spilled material.

· Stop leak if you can do it without risk.

· If possible, turn leaking containers so that gas escapes rather than liquid.

· Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.

· Do not direct water at spill or source of leak.

· Prevent spreading of vapors through sewers, ventilation systems and confined areas.

· Isolate area until gas has dispersed.

CAUTION: When in contact with refrigerated/cryogenic liquids, many materials become brittle and are likely to break without warning.

FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Clothing frozen to the skin should be thawed before being removed.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

PUBLIC SAFETY

- **CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.
- Always wear thermal protective clothing when handling refrigerated/cryogenic liquids.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 800 meters (1/2 mile).

Fire

CAUTION: When in contact with refrigerated/cryogenic liquids, many materials become brittle and are likely to break without warning.

FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Clothing frozen to the skin should be thawed before being removed.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

PUBLIC SAFETY

- **CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.
- Always wear thermal protective clothing when handling refrigerated/cryogenic liquids.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 800 meters (1/2 mile).

Fire

· If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.

POTENTIAL HAZARDS

FIRE OR EXPLOSION

· **EXTREMELY FLAMMABLE.**

· Will be easily ignited by heat, sparks or flames.

· Will form explosive mixtures with air.

· Vapors from liquefied gas are initially heavier than air and spread along ground.

CAUTION: Hydrogen (UN1049), Deuterium (UN1957) and Methane (UN1971) are lighter than air and will rise. Hydrogen and Deuterium fires are difficult to detect since they burn with an invisible flame.

Use an alternate method of detection (thermal camera, broom handle, etc.)

· Vapors may travel to source of ignition and flash back.

· Cylinders exposed to fire may vent and release flammable gas through pressure relief devices.

· Containers may explode when heated.

· Ruptured cylinders may rocket.

HEALTH

· Vapors may cause dizziness or asphyxiation without warning.

· Some may be irritating if inhaled at high concentrations.

· Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.

· Fire may produce irritating and/or toxic gases.

· If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.

POTENTIAL HAZARDS

FIRE OR EXPLOSION

· **EXTREMELY FLAMMABLE.**

· Will be easily ignited by heat, sparks or flames.

· Will form explosive mixtures with air.

· Vapors from liquefied gas are initially heavier than air and spread along ground.

CAUTION: Hydrogen (UN1049), Deuterium (UN1957) and Methane (UN1971) are lighter than air and will rise. Hydrogen and Deuterium fires are difficult to detect since they burn with an invisible flame.

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· Vapors may travel to source of ignition and flash back.

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HEALTH

· Vapors may cause dizziness or asphyxiation without warning.

· Some may be irritating if inhaled at high concentrations.

· Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.

· Fire may produce irritating and/or toxic gases.

· If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.

POTENTIAL HAZARDS

FIRE OR EXPLOSION

· **EXTREMELY FLAMMABLE.**

· Will be easily ignited by heat, sparks or flames.

· Will form explosive mixtures with air.

· Vapors from liquefied gas are initially heavier than air and spread along ground.

CAUTION: Hydrogen (UN1049), Deuterium (UN1957) and Methane (UN1971) are lighter than air and will rise. Hydrogen and Deuterium fires are difficult to detect since they burn with an invisible flame.

Use an alternate method of detection (thermal camera, broom handle, etc.)

· Vapors may travel to source of ignition and flash back.

· Cylinders exposed to fire may vent and release flammable gas through pressure relief devices.

· Containers may explode when heated.

· Ruptured cylinders may rocket.

HEALTH

· Vapors may cause dizziness or asphyxiation without warning.

· Some may be irritating if inhaled at high concentrations.

· Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.

· Fire may produce irritating and/or toxic gases.

G 116
GASES FLAMMABLE
(UNSTABLE)

EMERGENCY RESPONSE

FIRE

· **DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.**

Small Fires

· Dry chemical or CO2.

Large Fires

· Water spray or fog.

· Move containers from fire area if you can do it without risk.

Fire involving Tanks

· Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.

· Cool containers with flooding quantities of water until well after fire is out.

· Do not direct water at source of leak or safety devices; icing may occur.

· Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.

· ALWAYS stay away from tanks engulfed in fire.

· For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

· ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).

· All equipment used when handling the product must be grounded.

· Do not touch or walk through spilled material.

· Stop leak if you can do it without risk.

· If possible, turn leaking containers so that gas escapes rather than liquid.

· Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.

· Do not direct water at spill or source of leak.

· Prevent spreading of vapors through sewers, ventilation systems and confined areas.

· Isolate area until gas has dispersed.

FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- Clothing frozen to the skin should be thawed before being removed.
- In case of contact with liquefied gas, thaw frosted parts with lukewarm water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

PUBLIC SAFETY

- **CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.
- Always wear thermal protective clothing when handling refrigerated/cryogenic liquids.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 800 meters (1/2 mile).

Fire

- If tank, rail car or tank truck is involved in a fire, ISOLATE for 1600 meters (1 mile) in all directions; also, consider initial evacuation for 1600 meters (1 mile) in all directions.

FIRE OR EXPLOSION

· **EXTREMELY FLAMMABLE.**

· Will be easily ignited by heat, sparks or flames.

· Will form explosive mixtures with air.

. Silane will ignite spontaneously in air.

. Those substances designated with a "P" may polimerize explosively when heated or involved in a fire.

· Vapors from liquefied gas are initially heavier than air and spread along ground.

· Vapors may travel to source of ignition and flash back.

· Cylinders exposed to fire may vent and release flammable gas through pressure relief devices.

· Containers may explode when heated.

· Ruptured cylinders may rocket.

HEALTH

· Vapors may cause dizziness or asphyxiation without warning.

· Some may be irritating if inhaled at high concentrations.

: Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.

· Fire may produce irritating and/or toxic gases.

G 124
GASES – TOXICS and/or CORROSIVE/OXIDIZING

EMERGENCY RESPONSE

FIRE

Small Fires

- **Water only; no dry chemical, CO2 or Halon®.**
- Contain fire and let burn. If fire must be fought, water spray or fog is recommended.
- Do not get water inside containers.
- Move containers from fire area if you can do it without risk.
- Damaged cylinders should be handled only by specialists.

Fire involving Tanks

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Do not direct water at source of leak or safety devices; icing may occur.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

- Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire.
- Do not touch or walk through spilled material.
- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Stop leak if you can do it without risk.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Do not direct water at spill or source of leak.
- If possible, turn leaking containers so that gas escapes rather than liquid.
- Prevent entry into waterways, sewers, basements or confined areas.
- Isolate area until gas has dispersed.
- Ventilate the area.

FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.

- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Clothing frozen to the skin should be thawed before being removed.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim warm and quiet.
- Keep victim under observation.
- Effects of contact or inhalation may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

PUBLIC SAFETY

- **CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Many gases are heavier than air and will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Keep out of low areas.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See the Table of Initial Isolation and Protective Action Distances.

Fire

· 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.

POTENTIAL HAZARDS

HEALTH

· **TOXIC; may be fatal if inhaled or absorbed through skin.**

· Fire will produce irritating, corrosive and/or toxic gases.

· Contact with gas or liquefied gas may cause burns, severe injury and/or frostbite.

· Runoff from fire control may cause pollution.

FIRE OR EXPLOSION

· Substance does not burn but will support combustion.

· Vapors from liquefied gas are initially heavier than air and spread along ground.

· These are strong oxidizers and will react vigorously or explosively with many materials including fuels.

· May ignite combustibles (wood, paper, oil, clothing, etc.).

· Some will react violently with air, moist air and/or water.

· Cylinders exposed to fire may vent and release toxic and/or corrosive gas through pressure relief devices.

· Containers may explode when heated.

· Ruptured cylinders may rocket.

G 128

FLAMMABLE LIQUIDS

(Non-polar water immiscible)

EMERGENCY RESPONSE

FIRE

CAUTION: All these products have a very low flash point: Use of water spray when fighting fire may be inefficient.

CAUTION: For mixtures containing a high percentage of an alcohol or polar solvent, alcohol-resistant foam may be more effective.

Small Fires

· Dry chemical, CO2, water spray or regular foam.

Large Fires

· Water spray, fog or regular foam.

· Use water spray or fog; do not use straight streams.

· Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

· Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.

· Cool containers with flooding quantities of water until well after fire is out.

· Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.

· ALWAYS stay away from tanks engulfed in fire.

· For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

· ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).

· All equipment used when handling the product must be grounded.

· Do not touch or walk through spilled material.

· Stop leak if you can do it without risk.

· Prevent entry into waterways, sewers, basements or confined areas.

· A vapor suppressing foam may be used to reduce vapors.

· Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.

· Use clean non-sparking tools to collect absorbed material.

Large Spills

· Dike far ahead of liquid spill for later disposal.

G 128

FLAMMABLE LIQUIDS

(Non-polar water immiscible)

EMERGENCY RESPONSE

FIRE

CAUTION: All these products have a very low flash point: Use of water spray when fighting fire may be inefficient.

CAUTION: For mixtures containing a high percentage of an alcohol or polar solvent, alcohol-resistant foam may be more effective.

Small Fires

· Dry chemical, CO2, water spray or regular foam.

Large Fires

· Water spray, fog or regular foam.

· Use water spray or fog; do not use straight streams.

· Move containers from fire area if you can do it without risk.

Fire involving Tanks or Car/Trailer Loads

· Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.

· Cool containers with flooding quantities of water until well after fire is out.

· Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.

· ALWAYS stay away from tanks engulfed in fire.

· For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

· ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).

· All equipment used when handling the product must be grounded.

· Do not touch or walk through spilled material.

· Stop leak if you can do it without risk.

· Prevent entry into waterways, sewers, basements or confined areas.

· A vapor suppressing foam may be used to reduce vapors.

· Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.

· Use clean non-sparking tools to collect absorbed material.

Large Spills

· Dike far ahead of liquid spill for later disposal.

· Water spray may reduce vapor; but may not prevent ignition in closed spaces.

FIRST AID

· Move victim to fresh air.

· Call 911 or emergency medical service.

· Give artificial respiration if victim is not breathing.

· Administer oxygen if breathing is difficult.

· Remove and isolate contaminated clothing and shoes.

· In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

· Wash skin with soap and water.

· In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.

· Keep victim warm and quiet.

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

PUBLIC SAFETY

· **CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**

· As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.

· Keep unauthorized personnel away.

· Stay upwind.

· Keep out of low areas.

· Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

· Wear positive pressure self-contained breathing apparatus (SCBA).

· Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

· Consider initial downwind evacuation for at least 300 meters (1000 feet).

Fire

· 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.

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- **HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.**
- Vapors may form explosive mixtures with air.
- Vapors may travel to source of ignition and flash back.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapor explosion hazard indoors, outdoors or in sewers.
- **Those substances designated with a "P" may polymerize explosively when heated or involved in a fire.**
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids are lighter than water.
- Substance may be transported hot.
- **If molten aluminum is involved, refer to GUIDE 169.**

HEALTH

- Inhalation or contact with material may irritate or burn skin and eyes.
- Fire may produce irritating, corrosive and/or toxic gases.
- Vapors may cause dizziness or suffocation.
- Runoff from fire control or dilution water may cause pollution.

G 132

FLAMMABLE LIQUIDS – CORROSIVE

EMERGENCY RESPONSE

FIRE

· **Some of these materials may react violently with water.**

Small Fires

· Dry chemical, CO2, water spray or alcohol-resistant foam.

Large Fires

· Water spray, fog or alcohol-resistant foam.

· Move containers from fire area if you can do it without risk.

· Dike fire-control water for later disposal; do not scatter the material.

· Do not get water inside containers.

Fire involving Tanks or Car/Trailer Loads

· Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.

· Cool containers with flooding quantities of water until well after fire is out.

· Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.

· ALWAYS stay away from tanks engulfed in fire.

· For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

· Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire.

· ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).

· All equipment used when handling the product must be grounded.

· Do not touch or walk through spilled material.

· Stop leak if you can do it without risk.

· Prevent entry into waterways, sewers, basements or confined areas.

· A vapor suppressing foam may be used to reduce vapors.

· Absorb with earth, sand or other non-combustible material and transfer to containers (except for Hydrazine).

· Use clean non-sparking tools to collect absorbed material.

Large Spills

· Dike far ahead of liquid spill for later disposal.

· Water spray may reduce vapor; but may not prevent ignition in closed spaces.

FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.
- Keep victim warm and quiet.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

PUBLIC SAFETY

- **CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Large Spill

· See the Table of Initial Isolation and Protective Action Distances for highlighted substances. For non-highlighted substances, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

· 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.

POTENTIAL HAZARDS

FIRE OR EXPLOSION

· **Flammable/combustible materials.**

· May be ignited by heat, sparks or flames.

· Vapors may form explosive mixtures with air.

· Vapors may travel to source of ignition and flash back.

· Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).

· Vapor explosion hazard indoors, outdoors or in sewers.

· **Those substances designated with a "P" may polymerize explosively when heated or involved in a fire.**

· Runoff to sewer may create fire or explosion hazard.

· Containers may explode when heated.

· Many liquids are lighter than water.

HEALTH

· May cause toxic effects if inhaled or ingested/swallowed.

· Contact with substance may cause severe burns to skin and eyes.

· Fire will produce irritating, corrosive and/or toxic gases.

· Vapors may cause dizziness or suffocation.

· Runoff from fire control or dilution water may cause pollution.

G 137
SUBSTANCES WATER REACTIVE – CORROSIVE
EMERGENCY RESPONSE

FIRE

· When material is not involved in fire, do not use water on material itself.

Small Fires

· Dry chemical or CO2.

· Move containers from fire area if you can do it without risk.

Large Fires

· Flood fire area with large quantities of water, while knocking down vapors with water fog. If insufficient water supply: knock down vapors only.

Fire involving Tanks or Car/Trailer Loads

· Cool containers with flooding quantities of water until well after fire is out.

· Do not get water inside containers.

· Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.

· ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

· Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire.

· Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

· Stop leak if you can do it without risk.

· Use water spray to reduce vapors; do not put water directly on leak, spill area or inside container.

· Keep combustibles (wood, paper, oil, etc.) away from spilled material.

Small Spills

· Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.

· Use clean non-sparking tools to collect material and place it into loosely covered plastic containers for later disposal.

· Prevent entry into waterways, sewers, basements or confined areas.

FIRST AID

· Move victim to fresh air.

· Call 911 or emergency medical service.

· Give artificial respiration if victim is not breathing.

- **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Removal of solidified molten material from skin requires medical assistance.
- Keep victim warm and quiet.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

PUBLIC SAFETY

- **CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate enclosed areas.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See the Table of Initial Isolation and Protective Action Distances for highlighted substances. For non-highlighted substances, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

· 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.

POTENTIAL HAZARDS

HEALTH

· CORROSIVE and/or TOXIC; inhalation, ingestion or contact (skin, eyes) with vapors, dusts or substance may cause severe injury, burns or death.
· Fire will produce irritating, corrosive and/or toxic gases.
· Reaction with water may generate much heat that will increase the concentration of fumes in the air.
· Contact with molten substance may cause severe burns to skin and eyes.
· Runoff from fire control or dilution water may cause pollution.

FIRE OR EXPLOSION

· **EXCEPT FOR ACETIC ANHYDRIDE (UN1715), THAT IS FLAMMABLE, some of these materials may burn, but none ignite readily.**
· May ignite combustibles (wood, paper, oil, clothing, etc.).
· Substance will react with water (some violently), releasing corrosive and/or toxic gases.
· Flammable/toxic gases may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.).
· Contact with metals may evolve flammable hydrogen gas.
· Containers may explode when heated or if contaminated with water.
· Substance may be transported in a molten form.

G 138
SUBSTANCES WATER-REACTIVE
(Emitting flammable gases)

EMERGENCY RESPONSE

FIRE

· **DO NOT USE WATER OR FOAM.**

Small Fires

· Dry chemical, soda ash, lime or sand.

Large Fires

· DRY sand, dry chemical, soda ash or lime or withdraw from area and let fire burn.

· Move containers from fire area if you can do it without risk.

Magnesium Fires

· DRY sand, sodium chloride powder, graphite powder or Met-L-X® powder.

Lithium Fires

· DRY sand, sodium chloride powder, graphite powder, copper powder or Lith-X® powder.

Fire involving Tanks or Car/Trailer Loads

· Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.

· Do not get water inside containers.

· Cool containers with flooding quantities of water until well after fire is out.

· Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.

· ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

· ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).

· Do not touch or walk through spilled material.

· Stop leak if you can do it without risk.

· Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.

· **DO NOT GET WATER on spilled substance or inside containers.**

Small Spills

· Cover with DRY earth, DRY sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.

· Dike for later disposal; do not apply water unless directed to do so.

Powder Spills

· Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry.

· **DO NOT CLEAN-UP OR DISPOSE OF, EXCEPT UNDER SUPERVISION OF A SPECIALIST.**

FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, wipe from skin immediately; flush skin or eyes with running water for at least 20 minutes.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

PUBLIC SAFETY

- **CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate the area before entry.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Large Spill

- See the Table of Initial Isolation and Protective Action Distances for highlighted substances. For non-highlighted substances, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

- 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.

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Produce flammable gases on contact with water.
- May ignite on contact with water or moist air.
- Some react vigorously or explosively on contact with water.
- May be ignited by heat, sparks or flames.
- May re-ignite after fire is extinguished.
- Some are transported in highly flammable liquids.
- Runoff may create fire or explosion hazard.

HEALTH

- Inhalation or contact with vapors, substance or decomposition products may cause severe injury or death.
- May produce corrosive solutions on contact with water.
- Fire will produce irritating, corrosive and/or toxic gases.
- Runoff from fire control may cause pollution.

G 140
OXIDIZERS

EMERGENCY RESPONSE

FIRE

Small Fires

· Use water. Do not use dry chemicals or foams. CO2 or Halon® may provide limited control.

Large Fires

· Flood fire area with water from a distance.

· Move containers from fire area if you can do it without risk.

· Do not move cargo or vehicle if cargo has been exposed to heat.

· Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.

· Cool containers with flooding quantities of water until well after fire is out.

· ALWAYS stay away from tanks engulfed in fire.

· For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

· Keep combustibles (wood, paper, oil, etc.) away from spilled material.

· Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

· Stop leak if you can do it without risk.

· Do not get water inside containers.

Small Dry Spills

· With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.

Small Liquid Spills

· Use a non-combustible material like vermiculite or sand to soak up the product and place into a container for later disposal.

Large Spills

· Dike far ahead of liquid spill for later disposal.

· **Following product recovery, flush area with water.**

FIRST AID

· Move victim to fresh air.

· Call 911 or emergency medical service.

· Give artificial respiration if victim is not breathing.

· Administer oxygen if breathing is difficult.

- Remove and isolate contaminated clothing and shoes.
- Contaminated clothing may be a fire risk when dry.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Keep victim warm and quiet.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

PUBLIC SAFETY

- **CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 100 meters (330 feet).

Fire

- 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.

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- These substances will accelerate burning when involved in a fire.
- Some may decompose explosively when heated or involved in a fire.
- May explode from heat or contamination.
- Some will react explosively with hydrocarbons (fuels).

- **May ignite combustibles (wood, paper, oil, clothing, etc.). Warning for PURATE®: Immediately remove any clothes that is suspected to be contaminated with PURATE®.**
- Containers may explode when heated.
- Runoff may create fire or explosion hazard.

HEALTH

- Inhalation, ingestion or contact (skin, eyes) with vapors or substance may cause severe injury, burns or death.
- Fire may produce irritating, corrosive and/or toxic gases.
- Runoff from fire control or dilution water may cause pollution.

G 141
OXIDIZERS- TOXIC

EMERGENCY RESPONSE

FIRE

Small Fires

· Use water. Do not use dry chemicals or foams. CO_2 or Halon® may provide limited control.

Large Fires

· Flood fire area with water from a distance.

· Move containers from fire area if you can do it without risk.

· Do not move cargo or vehicle if cargo has been exposed to heat.

· Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.

· Cool containers with flooding quantities of water until well after fire is out.

· ALWAYS stay away from tanks engulfed in fire.

· For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

SPILL OR LEAK

· Keep combustibles (wood, paper, oil, etc.) away from spilled material.

· Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

· Stop leak if you can do it without risk.

Small Dry Spills

· With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.

Large Spills

· Dike far ahead of spill for later disposal.

FIRST AID

· Move victim to fresh air.

· Call 911 or emergency medical service.

· Give artificial respiration if victim is not breathing.

· Administer oxygen if breathing is difficult.

· Remove and isolate contaminated clothing and shoes.

· Contaminated clothing may be a fire risk when dry.

· In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

· Keep victim warm and quiet.

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

PUBLIC SAFETY

· **CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**

· As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.

· Keep unauthorized personnel away.

· Stay upwind.

· Keep out of low areas.

· Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

· Wear positive pressure self-contained breathing apparatus (SCBA).

· Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.

· Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

· Consider initial downwind evacuation for at least 100 meters (330 feet).

Fire

· 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.

POTENTIAL HAZARDS

FIRE OR EXPLOSION

· These substances will accelerate burning when involved in a fire.

· May explode from heat or contamination.

· Some may burn rapidly.

· Some will react explosively with hydrocarbons (fuels).

· May ignite combustibles (wood, paper, oil, clothing, etc.).

· Containers may explode when heated.

· Runoff may create fire or explosion hazard.

HEALTH

· Toxic by ingestion.

· Inhalation of dust is toxic.

- Fire may produce irritating, corrosive and/or toxic gases.
- Contact with substance may cause severe burns to skin and eyes.
- Runoff from fire control or dilution water may cause pollution.

G 154
SUBSTANCE TOXIC and/or CORROSIVE (Non-Combustible)

EMERGENCY RESPONSE

FIRE

Small Fires

· Dry chemical, CO2 or water spray.

Large Fires

· Dry chemical, CO2, alcohol-resistant foam or water spray.

· Move containers from fire area if you can do it without risk.

· Dike fire-control water for later disposal; do not scatter the material.

Fire involving Tanks or Car/Trailer Loads

· Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.

· Do not get water inside containers.

· Cool containers with flooding quantities of water until well after fire is out.

· Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.

· ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK

· ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).

· Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

· Stop leak if you can do it without risk.

· Prevent entry into waterways, sewers, basements or confined areas.

· Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.

· DO NOT GET WATER INSIDE CONTAINERS.

FIRST AID

· Move victim to fresh air.

· Call 911 or emergency medical service.

· Give artificial respiration if victim is not breathing.

· **Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.**

· Administer oxygen if breathing is difficult.

· Remove and isolate contaminated clothing and shoes.

- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- For minor skin contact, avoid spreading material on unaffected skin.
- Keep victim warm and quiet.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

PUBLIC SAFETY

- **CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate enclosed areas.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

EVACUATION

Spill

- See the Table of Initial Isolation and Protective Action Distances for highlighted substances. For non-highlighted substances, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

Fire

- 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.

POTENTIAL HAZARDS

HEALTH

- **TOXIC; inhalation, ingestion or skin contact with material may cause severe injury or death.**
- Contact with molten substance may cause severe burns to skin and eyes.

· Avoid any skin contact.

· Effects of contact or inhalation may be delayed.

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

· Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution.

FIRE OR EXPLOSION

· Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.

· Some are oxidizers and may ignite combustibles (wood, paper, oil, clothing, etc.).

· Contact with metals may evolve flammable hydrogen gas.

· Containers may explode when heated.

G 172
Mercury
(Non-Combustible)

EMERGENCY RESPONSE

FIRE

· Use extingushing agent suitable for type of surrounding fire.

. **Do not direct water at the heated metal**.

SPILL OR LEAK

· Do not touch or walk through spilled material.

. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

· Stop leak if you can do it without risk.

· Prevent entry into waterways, sewers, basements or confined areas.

. Do not use steel or aluminum tools and equipment.

· Cover with earth, sand or other non-combustible material followed with plastic sheet to minimize spreading or contact with rain.

. For mercury, use mercury spill kit.

· Mercury spill areas may be subsequently treated with calcium sulphide/calcium sulfide or with sodium thosulphate/sodium thiosulfate to neutralize any residual mercury.

FIRST AID

· Move victim to fresh air.

· Call 911 or emergency medical service.

· Give artificial respiration if victim is not breathing.

· Administer oxygen if breathing is difficult.

· Remove and isolate contaminated clothing and shoes.

· In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.

· Keep victim warm and quiet.

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

PUBLIC SAFETY

· **CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**

· As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.

· Stay upwind.

. Keep unauthorized personnel away..

PROTECTIVE CLOTHING

· Wear positive pressure self-contained breathing apparatus (SCBA).

· Structural firefighters' protective clothing provides limited protection.

EVACUATION

Spill

· Consider initial downwind evacuation for at least 100 meters (330 feet).

Fire

· When any large container is involved in a fire, consider intial evacuation for 500 meters (1/3 mile) in all directions.

POTENTIAL HAZARDS

HEALTH

· Inhalation of vapors or contact with substance will result in contamination and potential harmful effects.

· Fire will produce irritating, corrosive and/or toxic gases.

FIRE OR EXPLOSION

· Non-combustible, substance itself does not burn but may react upon heating to produce corrosive and/or toxic fumes.

· Runoff may pollute waterways.

15.4 EMERGENCY RESPONSE EQUIPMENT

- FOUR (4) Dragger Air Boss Self-Containment Breathing Apparatuses (SCBA) Kits
  Location:
  Control Room (third floor) 2
  Water Treatment 2

- Three (3) Vertical Rescue Strechers, Backboards and Baskets
  Location:
  Turbine Deck (third floor) 1

- Emergency Rescue and Medical Response Supplies
  Location:
  Control Room and Turbine Deck (third floor)
  Administrative Building Reception

- Four (4) Vertical Rescue Equipment and Supplies
  Location:
  Turbine Deck (third floor) Rescue Equipment Tool Box and Storage House

- One (1) Confined Space Tripod with 350 lbs capacity pulley
  Location:
  Turbine Deck (third floor)

- Six (8) Multi-Gas Analyzer Meters
  Location:
  - ✓ Control Room (third floor) – Two (2) Dragger Model O_2, CO, LEL, H_2S sensors and Two (2) Dragger Model with NH_3 sensors
  - ✓ Water Treatment Building- one (1) Dragger Model O_2, LEL, CO, NH_3 sensors
  - ✓ Safety Team Leader Office near Administration Building Lobby- Two (2) Dragger Model O2, CO, LEL, H2S sensors

- Two (2) AED
  Location:
  Control Room (third floor) 1
  Administration Building Lobby 1

- Fire Alarm, Deluge and Sprinkler System

- Fire Extinguishers and Hoses Stations

- DOT Emergency Response Guide 2012 handbook are available at Control Room, Water Tretament and Administration Building Reception Desk.

- Portable Neutralizer Kit for acid, caustic or solvent solutions spills. Turbine Laboratory

16.0 TRAINING & DRILLS

All AES Puerto Rico employees are required to attend training on the elements of this Emergency Response Plan on an annual basis. Additional safety training is also provided to comply with applicable U.S.A. and Puerto Rico OSHA regulations.

Emergency response instructions will be provided to contractors and visitors as a first responder awareness level.

AES Puerto Rico personnel shall conduct emergency response drills for different emergency scenarios. The ERP drills will be held at least twice a year. They will consider safety, security and environmental emergency response scenarios. The ERP drill performance shall be documented in writing and it shall include an evaluation of the effectiveness of the emergency response drill and opportunities for improvements.

17.0 EMERGENCY TELEPHONE NUMBERS

Department	Phone
PR Emergency Management Agency (AEME)	(787) 724-0124
Puerto Rico Fire Department	(787) 864-2330; 864-3700; Special Operation Division/Ponce (787) 462-7091; Santa Isabel/Coamo Station (787)-206-9114
Poisoning Control Center/Línea de Ayuda de Envenenamiento	(787) 754-8536 ---754-8535/1-800-222-1222
Centro Medico	(787) 777-3535
American Red Cross	(787) 725-0121
Cuerpo de Ingenieros	(787) 729-6875
Defensa Civil	(787) 864-1946
Medical Emergency	(787) 864-4300 ext. 2225/2226
Dr. Jose Rivera Irizarry	(787) 955-1594
FBI	(787) 754-6000 or (787) 772-2181
Federal Marshall	(787) 253-0855
Hospital Cristo Redentor Guayama	(787) 864-4300 ER ext. 2225/2226
Hospital Santa Rosa Guayama	(787) 864-0101 ER ext. 325
Industrial Medical Center	(787) 766-6000
Shadai Ambulance	(787) 929-6779; 866-4436
Lebron & Santiago Ambulance	(787) 678-2766; 649-0989
National Response Center	1 (900) 548-8730; 1 (800) 424-8802
PROSHA	(787) 754-2172
Puerto Rico Police	(787) 866-2020; 866-2037
Puerto Rico Police Maritime- FURA	(787) 866-8392- Guayama
US Coast Guard	(787) 729-6770; 729-6800; 787-289-0739 and 787-289-2041 (Operation SJ); 284-4823 (Ponce) and (787)-510-7889 (on duty Ponce)
US Custom & Border Protection	(787) 841-3131 and (787) 841-3130
US Secret Service	(787) 277-1515