

Operation *Swift Solution* Project Update and Waste Disposal Considerations



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Presented to:

Kentucky Chemical Destruction Community Advisory Board (CDCAB)
Secondary Waste Working Group (SWWG)

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CHEMICAL WEAPONS DESTRUCTION

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Today's Objective



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- To share with the community where we are in the planning process for Operation *Swift Solution* and the issues we are addressing, particularly in the area of secondary waste
- To address any concerns, respond to questions and accept public input concerning those plans
- To move forward together in the elimination of this problem as safely and efficiently as possible



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Situation Refresher



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- Three corroding steel containers (often referred to as “ton containers”) in storage at the Blue Grass Chemical Activity (BGCA) pose a potential risk to the government workers who must monitor them, but also to depot operations and to the contractor workforce building the Blue Grass Chemical Agent-Destruction Pilot Plant (BGCAPP) nearby
- The continuing presence of these waste chemicals has the potential for disrupting depot operations, especially the BGCAPP construction schedule, due to the potential for future leaks; this will continue to be an unnecessary distraction for the workforce



The contents of these containers are a combination of the nerve agent GB, GB breakdown products and other waste fluids from past sampling and maintenance activities.



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Chronology of Events



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Date	Action
Aug 07	BGCA detects a leak in three steel containers
Sep 07	Initial discussions with Kentucky Department of Environmental Protection (KDEP), the BGCAPP workforce and Citizens' Advisory Commission (CAC)/CDCAB Co-chairs
Nov 07	Follow-on meetings with KDEP and CAC/CDCAB Co-chairs to discuss and receive input on technology options - Chemical Agent Transfer System (CHATS) or Explosive Destruction System
Dec 07	Path forward outlined to KDEP, BGCAPP project workforce, CAC/CDCAB and the public; detailed preparations initiated
Jan 08	Public meeting conducted
Feb-Mar 08	Documentation for Temporary Authorization Request (TAR) developed
Apr 08	TAR submitted to KDEP
May 08	Destruction/Treatment Plan submitted to KDEP
July 08	TAR deemed technically complete for construction, while KDEP is still reviewing technical completeness for treatment operations; low-level agent vapor originates from the container that leaked in Aug 07



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Solving the Problem



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- Proposed Action
 - Drain and neutralize the contents of the three steel containers and dispose of the liquid waste, the three empty containers and other residual waste material stored in the igloo
- Desired Result
 - Clean and empty igloo; all potential risk eliminated
- Assumptions
 - Work closely with stakeholders, the Blue Grass Army Depot (BGAD) and KDEP on permitting
 - Detailed planning continues; operations will start when all safety and environmental requirements are met
 - Chemical weapons treaty notification required
- Destruction Technology for GB Agent Mixture
 - Chemical Agent Transfer System (CHATS)
- Preferred Secondary Waste Treatment Approach
 - Off-site shipment to treatment, storage and disposal facility (TSDF)



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Today's Agenda



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- Technology Refresher
- Waste Generation
 - Liquid and solid wastes
 - Containers
 - Sampling
- Air Monitoring
- Worker Safety
- Waste Disposition
 - Long term storage concerns
 - TSDF information



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Technology Refresher



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- Scope – Using the CHATS glove box, government technicians from the Edgewood Chemical Biological Center in Maryland will transfer the contents of the steel containers into the CHATS' 20 gallon reactor for neutralization by hydrolysis
- Process – Employs single stage neutralization process involving the same GB "recipe" and clearing method to be used in plant operations





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Technology Refresher



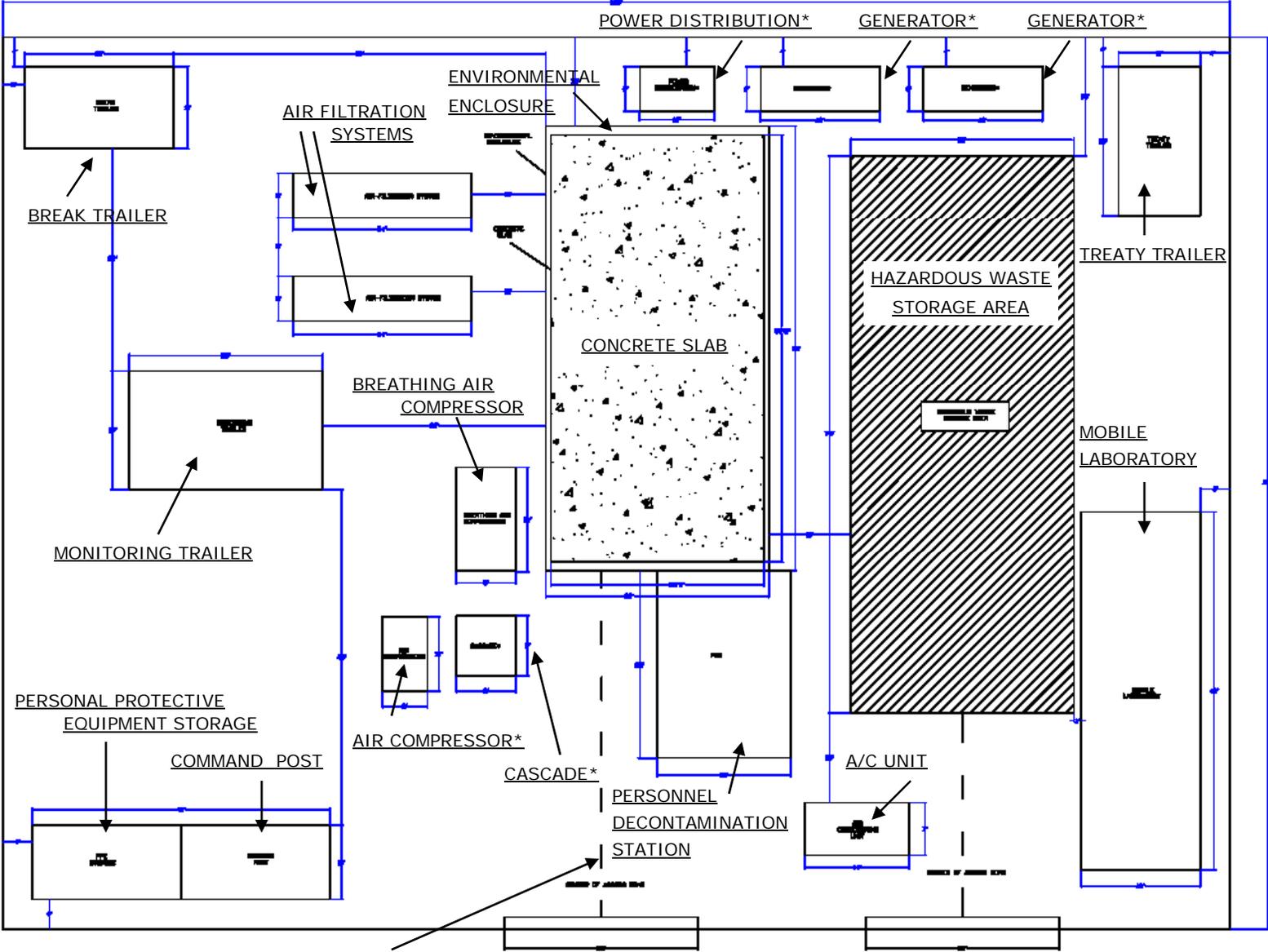
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- Previous and Current Use of CHATS
 - Chemical Transfer Facility at Aberdeen Proving Ground (operates under Maryland permit)
 - Newport Chemical Agent Disposal Facility (transferred agent to neutralization reactor)
 - Aberdeen Chemical Agent Disposal Facility (transferred agent to neutralization reactor)

- Estimated Duration & Cost
 - Operations expected to take approximately three months
 - Cost anticipated to be approximately \$3 million

- Representatives from the Centers for Disease Control (CDC) and KDEP to visit Aberdeen Proving Ground, Md., on July 24 to review CHATS operational procedures

Working Site Layout



SCALE: 1/4-inch = 1 Foot

*NOTE: PORTABLE EQUIPMENT MAY BE RELOCATED AS NEEDED
BASED ON THE OPERATION



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Waste Generation: Liquid & Solid



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- Liquid wastes
 - ~8,000 gallons of hazardous liquid waste containing sodium hydroxide and/or heavy metals will be generated
 - GB hydrolysate and rinsewaters produced during the CHATS neutralization process and the cleaning and decontaminating of CHATS and treatment vessels
 - Used decontamination solution from cleaning the steel containers
 - ~1,600 gallons of non-hazardous liquid waste generated from the Personnel Decontamination Station
- Solid wastes
 - Combination of legacy waste (2004 & 2007 operations), personal protective equipment (PPE) and solids from the steel container cut and clean operations will be considered solid waste
 - Estimated solid waste will fill 46 55-gallon containers



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Waste Generation: Containers



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- Some hazardous liquid and all hazardous solid waste will be contained in 55-gallon containers in a Resource Conservation and Recovery Act (RCRA) permitted igloo
- Hydrolysate, used decontamination solutions and rinsates generated from the CHATS, steel container and waste decontamination activities will be handled as follows:
 - Will be placed in a 330-gallon intermediate bulk container (IBC) inside the environmental enclosure for interim holding
 - When IBC is full, contents will be sampled and analyzed for compliance and then transferred into an isotainer
 - Two isotainers will be used for the entire operation, one approximately 4,600 gallons, another approximately 3,700 gallons
 - Isotainers will be stored in the hazardous waste management area consisting of a crushed stone base measuring approximately 75 feet long by 30 feet wide
 - Containers will be placed within portable stone base berms and covered with tarps



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Waste Generation: Sampling



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- The overall sampling and analysis approach will accomplish two key goals:
 - Demonstrate that the agent is destroyed to the required level
 - Sufficiently characterize waste streams in compliance with RCRA requirements for waste analysis
- CDC's comments to the sampling and analysis plan have been incorporated
- Sampling methods used will be in compliance with guidelines specified in the Environmental Protection Agency Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846 (current edition)



The mobile analytical platform will house equipment to conduct on site analysis of neutralization product, air samples and secondary waste.



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Waste Generation: Liquid Waste Sampling



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Hydrolysate	Rinsewater/Spent Decontamination Solution
<ul style="list-style-type: none">▪ Liquid samples will be collected from the CHATS reactor and analyzed from the first four consecutive batches of each steel container to confirm GB destruction to less than 60 parts per billion▪ If met, sampling and analysis will continue with one sample for every IBC generated during operations	<ul style="list-style-type: none">▪ Water, sodium hydroxide and isopropyl alcohol will be used to rinse and decontaminate the steel containers▪ Rinsing and sampling will be repeated until treatment/screening level is met



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Waste Generation: Solid Waste Sampling



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- Solid wastes, such as those listed in the table below, will be vapor screened per Department of Army regulations and in accordance with Edgewood Chemical Biological Center Internal Operating Procedures

Types of Solid Waste

Decontaminated equipment, tools, rope, plastics
Decontaminated steel container halves and plugs
Steel container scraping solids
Laboratory wastes (vials, towels)
Used PPE
Filters
Miscellaneous wastes (wipes, cloths)



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Air Monitoring



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- Types of monitoring to be used mirror those routinely used at non-stockpile operations, U.S. Army Corps of Engineers remediation sites and at Chemical Materials Agency sites
 - Historical monitoring: Will provide historical evidence that agent concentrations in the area did not exceed limits
 - Near real time monitoring: Will determine airborne chemical concentration in the shortest amount of time at the monitoring level commensurate with engineering controls and worker protection
 - Confirmation monitoring: Will validate or refute a positive near real time measurement
 - Decontamination verification: Will verify the decontamination status of materials and equipment



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Air Monitoring



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- MINICAMS® will run continuously through operations; an audible and/or visual notification will alert onsite personnel and the Emergency Operations Center during non-operational hours

- Air monitoring support will also be augmented with Depot Area Air Monitoring Systems (DAAMS)

- The MINICAMS and/or DAAMS will monitor:
 - CHATS work space
 - Midbed of CHATS Air Filtration System (AFS)
 - Exhaust of the CHATS AFS
 - Midbed of Vapor Containment System (VCS) AFS
 - Exhaust of VCS AFS
 - Equipment Decontamination
 - Steel Container/Drum Storage Area
 - Personnel Decontamination Station



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Worker Safety



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- All personnel involved in CHATS activities will participate in a comprehensive health-monitoring program and will receive physical examinations throughout the operation
- Medical support will be provided by the BGAD Occupational Health Clinic and is required to be available during all operations
 - Augmented by Ireland Army Hospital, Fort Knox
- PPE levels will not be standard for all tasks; PPE levels were selected based upon the anticipated concentrations of contaminants that may be encountered, their chemical properties, toxicity and exposure rates



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Worker Safety – PPE Levels



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- PPE Levels B and C are shown below



Level B



Level C

- Level D PPE, which will also be worn, includes a slung mask, long-sleeved shirts and trousers, steel-toed boots, safety glasses and protective gloves



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Waste Disposition: Long Term Storage Concerns



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- Current date for start of BGCAPP operations is 2017, requiring at least six to nine years of storage
- Issues and Unknowns:
 - No data exists on the long term storage of GB hydrolysate
 - Cannot speculate on the chemical stability of the wastes over time
 - Costs associated with maintenance, monitoring and storage including staffing equipment and permitting, are unknown
- BGCAPP construction delays could be incurred should additional “stand-downs” be required
- Discussions with KDEP:
 - KDEP requested additional TAR to amend BGAD’s hazardous waste storage permit and provide contingency planning for storage beyond 90 days, if necessary



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Waste Disposition: TSDF Information



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- Shipping wastes off site for treatment and disposal at a licensed, commercial TSDF is the prudent approach over continued storage
- Two vendors have been evaluated: Veolia Environmental Services in Texas and Clean Harbors in Utah
- No final decision has been made
- Veolia has a proven track record of transporting and treating wastes safely
 - Protocols for shipping hydrolysate already established
 - Satellite tracking system is in place for shipments
 - Extensive incident response plans
- Request the opportunity to provide specific information regarding approaches to waste disposal, safety, public outreach and environmental standards to regulators, SWWG and other interested parties



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Questions/Discussion