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Demil Dispatch

Recent Progress on the Blue Grass Army Depot Demilitarization Effort.

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Global Demilitarization Symposium Emphasizes Need to Reform

In May, representatives from Kentucky's Division of Waste Management (Division) attended the 21st Annual Global Demilitarization Symposium and Exhibition. The event took place in Manheim, Pennsylvania, and featured speakers from the Environmental Protection Agency (EPA), the Department of Defense (DoD), and DoD contractors. In addition, the exhibition allowed vendors to showcase products that could make demilitarization cheaper, safer, or more efficient.

Many of the presentations discussed open burning and open detonation (OB/OD). For several decades, the DoD has preferred these two methods of destroying decommissioned munitions. Program Executive Officer for Ammunition and Keynote Speaker James Shields described OB/OD as relatively cheap, simple, and safe for workers. This is in part because, as Dr. Keith Clift of McAlester Army explained, OB/OD requires no pretreatment of munitions before demilitarization. Other technologies, such as thermal treatment or detonation chambers, require that munitions are disassembled or otherwise handled before they are destroyed, which poses risks to operators. Clift referred to OB/OD as "omnivorous" technologies—they can be used to destroy a large variety of munitions. However, he also questioned the cost-effectiveness of OB/OD, as costs of cleaning up such facilities can be high.

Most speakers seemed aware of the need to find alternatives to OB and OD. Jean Hartzell, acting

chairperson for the Joint Ordnance Commanders Group (JOCG) Environmental Subgroup, addressed citizens' growing concerns about OB/OD. The public has expressed increasing criticism over what many see as unmitigated releases of pollutants from OB/OD operations. EPA charter member Ken Shuster detailed the contamination found at OB and OD facilities and the cost of cleanup, which in some cases has been hundreds of millions of dollars. He emphasized the need to "phase out" OB/OD, and said that the best way to do so is for private entities to develop alternative technologies and convince DoD and EPA of their suitability. Shuster told the audience, "It's looking bad for OB/OD."

Among regulators' and citizens' concerns about OB/OD is the difficulty of quantifying environmental releases from the practice. Dr. Brian Gullet of the EPA Office of Research and Development described a method in which drones are used to sample emissions from OB and OD events. The drones replace older sampling methods that were unwieldy and often inaccurate. The results of sampling can be used to develop new emission factors, from which regulators and site managers can calculate emissions of pollutants from individual facilities.

Another important tool is the OB/OD Dispersion Model (OBODM), a program that calculates concentrations of pollutants near OB/OD sites. Unfortunately, the

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Permit Compliance Schedules

According to 40 CFR 270.33, a hazardous waste permit may “specify a schedule of compliance leading to compliance with the Act and regulations”. The BGCAPP Main Plant and the Explosive Destruction Technology (EDT) Facility both have hazardous waste permits that contain compliance schedules with significant requirements for additional information and test plans needed to comply with state and federal regulations.

The Main Plant’s Research, Development, and Demonstration (RD&D) permit, issued in 2005, contains 30 compliance schedule Items. Because of the long lead time necessary for construction of the Main Plant and because of the first-of-a-kind nature of a number of the BGCAPP treatment units, much of the detail typically required in a hazardous waste permit application was placed in the compliance schedule of the RD&D Permit. Examples

from the RD&D permit include: the facility risk assessment, design drawings, inspection plan, waste analysis plan, agent destruction efficiency test plans and reports, and the treatment unit test plans and reports. A number of the 30 items have been submitted and approved by the Cabinet since the 2005 permit was issued and the updated RD&D permit, scheduled for issuance this year, should contain a compliance schedule more appropriate for a facility that has completed construction and is preparing to start pilot-testing and operations.

The EDT hazardous waste permit, issued September 2016, contains 17 compliance schedule Items. Examples from this permit include: an equipment test plan using surrogate material, a ramp-up period test plan, and an agent destruction efficiency demonstration test plan and report. The EDT compliance schedule generally outlines items needed to demonstrate that the plant is

ready to begin operations and will operate as expected.

For both BGCAPP Main Plant and EDT, the compliance schedule is a critical component of the hazardous waste permit and contains steps necessary for the facility to demonstrate that agent destruction operations will be protective of human health and the environment.



*Cut-out
of Rocket
to be
Treated
at BGCAPP*

SFTs, PCBs, and TSCA

It may seem like every little detail of BGCAPP requires its own permit. While that’s not entirely true, a few molecules of a harmful substance can trigger regulatory review. The shipping and firing tubes (SFTs) of GB and VX rockets contain small amounts of polychlorinated biphenyls (PCBs), which are regulated under the Toxic Substances Control Act (TSCA). Because some of these SFTs will be processed through BGCAPP, the facility needs TSCA approval.

Once fairly ubiquitous, PCBs are rarely used today. They were used in numerous industries during the mid-20th century. Because PCBs are non-flammable, electrically insulating, and stable, they seemed ideal for products such as plastics, electrical equipment, and thermal insulation. Eventually, PCBs were shown to have potential adverse health effects, including cancer. TSCA banned the manufacture of PCBs in 1979. However, the BGAD stockpile of rockets was assembled decades before the ban, when PCBs seemed like a smart way to stabilize rockets in storage.

At BGCAPP, most SFTs will be removed before each rocket is processed. The empty SFTs will be shipped to an off-site treatment or disposal facility. However, a few rockets were found to be leak-

ing (or potentially leaking) agent. The SFTs on these “leakers” are assumed to be contaminated with agent and therefore will go through the BGCAPP destruction process. During destruction, the SFTs may release, or desorb, some PCBs into the air within BGCAPP. BGCAPP’s thermal oxidizer will destroy any desorbed PCBs so that none are emitted through the stack.

Although the Kentucky Division of Waste Management issues most of BGAD’s permits, Kentucky does not have authority under TSCA. BGCAPP’s application had to go all the way to EPA Region IV for approval. EPA expects to issue a draft TSCA approval later this summer. Once the draft approval is issued, the public can view and comment on the draft, and a public availability session will be held on July 20, at 6 p.m. at the Blue Grass Chemical Stockpile Outreach Office at 1000 Commercial Drive, Suite 2, in Richmond, Kentucky. For more information on the TSCA approval, contact EPA Engineer Terri Crosby-Vega at crosby-vega.terri@epa.gov.

Permitting Begins for GB Sampling Operations

A new section of the BGAD Hazardous Waste Permit is in the works. On June 20, the Assembled Chemical Weapons Alternatives Office (ACWA) submitted a Class 2 modification request to the Division of Waste Management (Division) to add the GB sampling extraction operation (GB Sampling) to their permit.

The operation will be similar to mustard agent (H) sampling operations, which the Division permitted last year. Projectiles will be transported to an environmental enclosure that will be constructed in BGAD's Chemical Limited Area. Each projectile will be placed in a glovebox, where a remote-controlled drill will extract a sample of agent. The round will then be plugged and placed in a container called an "overpack." The overpacked projectile will be monitored for leaks before it is returned to storage. Unlike mustard sampling operations, in which rounds will be transported in enhanced on-site containers (EONCs), GB projectiles will be carried by flatbed truck between storage and the sampling facility. To ensure safety during transportation, each projectile will be placed in an overpack before it is moved.

ACWA will oversee the entire operation, which is projected to occur in Summer 2018. The U.S. Army Edgewood Chemical Biological Center (ECBC) will conduct the drilling and sampling.

While mustard sampling will be conducted to meet requirements under the Chemical Weapons Convention (CWC), or "Treaty," GB Sampling has a different purpose. The GB agent in munitions is not pure; each round contains a stabilizer that

mitigates agent degradation during storage. The BGAD stockpile has projectiles that each contain one of two different stabilizers. In contrast, the GB samples currently available to labs are pure, without the stabilizers that are present in munitions. The lab analytical methods that will be used at BGCAPP need to be calibrated to munitions-grade GB—and the only remaining quantities of munitions-grade GB are housed in munitions.

The GB Sampling operation will extract one liter of GB with each stabilizer. Ideally, the entire liter of each sample will be removed from a single projectile. However, because the rounds have been in storage for decades, the agent within the munitions may have begun to solidify. To extract enough GB for the lab, ACWA may need to sample two projectiles with each stabilizer, for a total of two to four projectiles transported and sampled during the operation. The samples will be shipped to the ECBC Chemical Transfer Facility in Maryland.

A public information meeting about the GB sampling extraction operation will be held on July 19, at 6 p.m. at the Blue Grass Chemical Stockpile Outreach Office at 1000 Commercial Drive, Suite 2, in Richmond, Kentucky. Copies of the permit modification request are available for review, and public comments will be accepted until August 19. For more information on GB Sampling, contact Sarah Parke at (859) 779-7452 or (859) 624-7279.



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original user interface for OBODM has been outdated for years; most modern computers can't run the program. University of Oklahoma professor Kurt Grammol presented a new user interface for OBODM that his team is developing. Within minutes, the model uses meteorological data and user inputs to show how the OB or OD event will disperse pollutants. Soon, OB/OD operators will be able to run OBODM from an app on almost any device to predict how operations may affect nearby areas.

Several presenters discussed successful demilitarization projects and new technologies that could replace some OB/OD operations. "Closed system" or "closed loop" technologies, destruction methods that emit little or no pollutants, were frequently mentioned. Bob Hayes, a representative from El Dorado Engineering, described the Camp Minden project. He said that the public asked for all 16 million pounds of propellant and ignitors at the facility to be destroyed in a single year of operations—with no emissions. El Dorado's contained burn unit demilitarized the munitions less than two years after the company was awarded the contract. Louie Wong of General Atomics gave a presentation on supercritical water oxidation (SCWO), a technology that BGCAPP plans to use to mineralize hydrolysate. Dr. Mohsen Sanai, who works with SRI International, discussed efforts to demilitarize scattered munitions so that components are not used to make improvised explosive devices (IEDs). The project has resulted in a portable system, which can be carried on a trailer or in a backpack, that even non-expert personnel can use to demilitarize a live M107 round in approximately 30 minutes. The system recovers explosives from munitions and uses the energy content to fuel itself. More information on each of these demilitarization technologies can be found at the developers' respective websites.

The Division employees who attended the symposium found the experience to be informative. They enjoyed the presentations and appreciated the chance to discuss demil with DoD and EPA staff. Look for Division representatives at the next Demil symposium!

What is Rev 6?

You may have heard the term “Rev 6” used in discussions regarding the Blue Grass Chemical Agent-Destruction Pilot Plant (BGCAPP) project, and wondered what it meant. In short, it means Revision #6 to the main plant Research Development & Demonstration (RD&D) permit application issued by Kentucky’s hazardous waste program. That’s not a simple answer either, so let’s break it down further.

In 2005, the Kentucky Division of Waste Management’s hazardous waste program issued an RD&D permit to BGCAPP which allowed main plant construction to begin, even while some key components of the destruction plant were still being developed. The application that was approved and incorporated into the 2005 permit was termed Revision #2 (Rev 2) to the initial permit application submitted.

So, what happened to Revisions 3, 4, and 5? Good question. They were submitted to the Division in order to keep the Division updated regarding ongoing administrative and technical changes to the destruction plant during construction (2005-2015). Due to the many continuing changes and refinements to the destruction plant, those revisions were never formally approved. It was like trying to nail down a moving target. Rev 6 serves to formally update the main plant application and will be incorporated into the revised RD&D permit. The current schedule is to issue the revised permit by the end of calendar year 2017.

Anyone who has kept up with the project is aware that there have been many major changes to the BGCAPP facility since 2005 – that is why Rev 6 has been termed a “mega-update” to the RD&D permit. In fact, Rev 6 is probably the last comprehensive modification to the RD&D permit prior to destruction operations. Future permit modifications will mostly deal with specific components of the main plant, but will not be as comprehensive in nature.

Reviewing and revising Rev 6 to incorporate 12 years of changes has proven to be a significant challenge for the entire BGCAPP team, but successful completion of this step should make future modifications to the permit easier.

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The mission of the Kentucky Division of Waste Management is to protect human health and the environment by minimizing adverse impacts on all citizens of the Commonwealth through the development of fair, equitable, and effective waste management programs.



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