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Demil Dispatch

Recent Progress on the Blue Grass Army Depot Chemical Demilitarization Effort.

Kentucky Department for Environmental Protection

Division of Waste Management

Hazardous Waste Branch

Blue Grass Army Depot Section

Select Munitions Require Additional Consideration

By: Bill Lunsford

Across the United States the number of existing chemical weapons is shrinking with almost seventy-five percent of the original stockpile destroyed. A process called "reverse assembly" is used at chemical demilitarization plants to separate explosive components from the munitions and to access the chemical agent for destruction by incineration or neutralization.

Problematic munitions have been identified which pose a greater risk and are not suitable for the reverse assembly process. One such problem is the mustard projectile that has an explosive component, called a burster, that can become stuck inside its housing within the munitions. When fed into the automatic machine, the projectile may be rejected and require manual processing which poses a much greater risk to the worker.

Multiple technologies have been identified which involve exploding the munitions inside of a confined chamber. Utilizing this equipment the chemical agent could be destroyed without any additional processing to dismantle the energetic components. There are many concerns however that must be addressed when considering the technology appropriate for operations at each site. Past performance, permitting capabilities,



Cutaway of a 155 mm projectile

throughput, reliability, munitions compatibility, flexibility, and the ability to hold samples for testing to ensure adequate destruction are all factors important to technology implementation.

Currently four sites are in various stages of considering these explosive detonation technologies (EDT). Disposal facilities in Alabama and Utah are each underway with the state permitting process for an EDT system. The army conducted an environmental assessment in Colorado with a finding of "no significant environmental impact expected". The BGCAPP in Kentucky is scheduled as the last plant to go online and is expected to submit a permit application to operate this type of technology in the near future.

Inspection of the Chemical Limited Area

By Bill Buchanan Jr.

On March 1-2, 2010, Division of Waste Management (DWM) inspectors visited the Chemical Limited Area of the Blue Grass Army Depot. The purpose of this visit was to inspect a portion of the igloos that house the

chemical weapons stored at BGAD. This inspection visit included an evaluation of the igloos themselves, the weapons, storage configurations and conditions of storage pallets, water infiltration and accumulation, igloo vents and drains, as well as the outside of the igloo for drainage and condition of

the geo-membranes (if applicable).

Also as a part of this inspection, the chemical storage laboratory, waste accumulation points and satellite accumulation

(Continued pg. 4)

The Scenery is Always Changing at BGCAPP

By: Ryan Kirkpatrick

Not long ago, the Blue Grass Chemical Agent-Destruction Pilot Plant (BGCAPP) consisted of little more than a few concrete slabs and some piles of steel awaiting placement. Today, however, construction at BGCAPP is yielding the excitement of advanced technologies and positive contributions to the surrounding community.

Engineering at BGCAPP is ninety-nine percent complete. The list of completed components is lengthy and soon to be added to that list are the hydrolysate storage area in April, standby diesel generators in May, electronic security system in June,

and entry control facility in September. Presently, the Metal Parts Treater (MPT) is being assembled in the Munitions Demilitarization Building (MDB). Once the MPT has been completely assembled, construction of the MDB will be continued around it.

As construction continues at BGCAPP, it employs 549 workers, forty-nine percent of which are from the local area. Employment has climbed eleven percent in the past three months alone and has contributed over \$48 million to local firms. In a time of economic depression, this is a great advantage to the local area in addition to the end result of the mission.



Above: MPT heating drum is inserted between the chamber doors

Below: Recent diagram of the BGCAPP facility



The Science of a Risk Assessment

By: Daniel Walker

From driving to work, investing in the stock market, to eating fast food; the possibility of suffering harm or loss is present in our daily lives. Knowingly or unknowingly we judge the likelihood of harm or loss - risk - as we conduct our activities. Small decisions based on experience impact our future. One could decide, "I'm not going to eat at that restaurant, I got sick the last time I went there." or "It's raining, I better slow down." Hopefully these simple decisions do lead to safer alternatives.

However, not every decision is as simple. When charged with keeping the environment and populations safe a variety of data is required to ensure proper precautions are taken and well informed decisions are made. A risk assessment is a compilation of this data interpreted to determine present and future risks. Risk managers rely on risk assessors to gather and interpret this data. Risk managers may work for government agencies, consulting firms, or businesses that have an operation or substance determined to be potentially dangerous.

Identifying stressors is essential to beginning a risk assessment. A stressor could be a chemical, physical, or biological unit with the ability to cause harm. Once identified, samples are taken to quantify the stressor in the environment. This is a very important step that involves the application

of sound experimental design to collect as many usable samples as possible within the economic and cultural constraints that may be present. After the samples are analyzed, the data is inspected to make sure it meets quality data objectives. If the data meets those quality objectives, the data can then be mapped and used to derive statistical measures such as averages and standard deviations.

For a screening level risk assessment, the easiest and fastest kind of assessment, the data are compared against concentrations of the stressors which are generally thought not to cause harm. These concentrations are determined by testing the substance on laboratory animals or observation of humans who contact these substances in their work. Toxicity assessment is another essential component of risk assessment.

In the instance of a chemical stressor; toxicity is a core concern. Defining how much or how long an exposure to a given chemical it takes to produce negative effects is typically data readily available to risk assessors from past chemical specific research. The nature of this research often utilizes animal specimens with physiological characteristics similar to those of humans to document dosage.

Background analysis can be performed to determine a baseline amount of the stressor (if any)

(continued pg.4)



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Meetings Just Got Easier

By: Amy McCracken

In the falling snow of February, the Frankfort Field Office (FFO) moved from its former home on Teton Trail to 200 Fair Oaks. Jon Maybriar showed up to hand out warm cinnamon biscuits while the field inspectors filled their trucks up with their belongings. This is the third move the field office has made in the past four years. Although the office at Teton Trail was better suited for a field office, all the members of FFO worked together to make the move a successful one. Change is constant, and this is just a little change that we can work with.

The BGAD team (Environmental Inspector III, Amy McCracken and Environmental Scientist II, Bill Buchanan) now share an office space with a common area to work together in. The space provides a nice spacious work area for the team to brainstorm, teach, and work out compliance issues together. "The move has been beneficial to us because we are closer to our permitting team and field ops branch manager", Buchanan said of the move. Field ops works closely with employees at the Central Office to ensure optimal communication pertaining to permitting and compliance issues at BGAD.

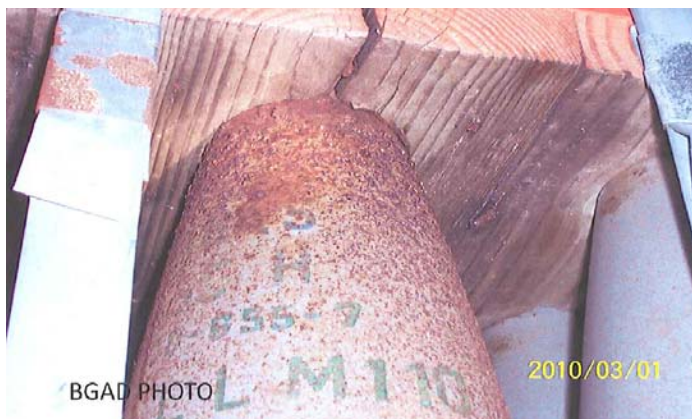


Bill Buchanan hard at work in Field Office's new home

Inspection of the Chemical Limited Area (cont.)

areas, the function of a Real Time Analytical Platform, and employee interviews were conducted.

Routine issues such as pallet deterioration and water infiltration continued to be observed, but have been consolidated to a spreadsheet by BGAD which allows for easier tracking and for more expedient application of remedial measures. Other observations include the condition of the munitions themselves (looking for rusting/pitting), geo-membrane condition (no tears/rips), vents (looking for obstructions/blockages), etc. Nothing unusual was observed during this



Rust pitted projectile secured in its pallet in an underground storage magazine (aka igloo)

inspection and no RCRA violations were discovered.

This inspection is the first in a series of at least four inspections that occur once per quarter. A sampling of igloos are selected as well as the other non-igloo items including those mentioned above as well as training records, waste disposal information, over-pack quantities on-hand, etc. All chemical munitions storage igloos are entered on an annual basis and a one hundred percent survey of the igloos are conducted, looking for RCRA related compliance in accordance with the facility storage permit.

The Science of a Risk Assessment (cont.)

present in the environment. Certain levels, dependant on the stressor, are acceptable and have no affect on humans or the environment. Risk assessors look at more than existing conditions though, preparation for future scenarios are just as important.

Probabilistic models utilizing a variety of scenarios can be performed to define how much of a stressor could be encountered in a given situation. These models cover a wide range of potential release amounts as well as the possibilities of various incidents occurring given historic data. Using these models, risk assessors can advise risk managers of the odds of an incident occurring. If a risk is deemed unacceptable the risk manager may then implement procedures to decrease the risk and enhance preparedness.

An array of transport mechanisms for exposure to a stressor



are considered when preparing a risk assessment. Inhalation of a potential airborne stressor is a consideration. If the stressor could contaminate soil, the instance of absorption through the skin is considered as well as accidental soil ingestion and uptake by plants that could later be consumed. Livestock exposed to stressors also provide a pathway for human exposure via human consumption of meat or milk from contaminated animals. Contaminated drinking water could be a

valid medium for the presence of the given stressor as well as consumption of any fish caught from a potentially contaminated water body. Breast milk is also an exposure path of concern with consideration to infant receptors.

Multiple human receptor groups are considered when performing a risk assessment. Residents and children near the area of concern are taken into consideration. Children and

infants are considered to be more sensitive receptors so the allowable exposure values are typically much lower than those applied to adults. Subsistence farmers near the site of the stressor of concern would have a higher intake of the meat, milk, and produce from the area so equations are formulated to account for these discrepancies. The same is done for potential subsistence fishers in the area with regard to their estimated increased fish consumption. In some assessments the children of the farmers and fishers are considered as additional receptor groups.

Peer reviews may be performed on a risk assessment to ensure that the procedures and parameters produced sound data. A sound risk assessment is a vital tool for risk managers to keep themselves, the public and the environment safe.

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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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Penitentiary Branch swells into the 200 Fair Oaks parking lot