

# Explosive Destruction Technology: Implementing a New Destruction Technology and Working with Project Stakeholders



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Written by:

Jeff Brubaker  
Site Project Manager  
Blue Grass Chemical Agent-Destruction Pilot Plant

Presented by:

Miguel Monteverde  
PEO ACWA Public Affairs Office

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Blue Grass Chemical Agent  
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# Blue Grass Munitions Stockpile

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*Mustard, also known as H, is a blister agent which causes severe chemical burns to the skin. H is contained in projectiles, such as the 155mm shell pictured above.*



*VX and Sarin (GB) are nerve agents which inhibit enzymes that control the human nervous system if inhaled or absorbed through the skin. They are contained in projectiles, which are shown in storage to the left, and M55 rockets, pictured to the right.*

- M55 GB and VX rockets
- 155mm mustard projectiles, also known as H
- 155mm VX projectiles
- 8-inch GB projectiles
- Department of Transportation bottles (H)
- Department of Transportation bottle (VX)



# Stakeholder Involvement Leading to Explosive Destruction Technology (EDT) Endorsement

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- **Initial communication with stakeholders in 2009; continued through 2012 and continues today**
  - Challenges in processing Tooele Chemical Agent Disposal Facility mustard projectiles (2009)
  - Comparison of munitions lot data between Tooele and Blue Grass (2010)
  - Results of X-ray analysis (2011)
  - Information on chemical operations of several different EDT systems (2011)
  - Stakeholder endorsement to use EDT for H projectile destruction (2012)





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# Problems With H Rounds at Tooele

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- **Problems processing mustard-agent filled 155mm projectiles at Tooele led PEO ACWA to request the National Research Council to conduct an assessment to analyze explosive destruction technology use at Blue Grass and Pueblo**
  - Tooele projectiles had a high rate of agent solidification, which complicates removal of the mustard agent from the projectile, and stuck bursters must then be removed by hand
  - Blue Grass has a high number of same-lot problematic munitions as Tooele (20 EA lot numbers common to both sites)
- **PEO ACWA worked closely with the U.S. Army Chemical Materials Activity to incorporate lessons learned from processing problematic mustard projectiles at Tooele**





# Blue Grass/Tooele Common Inventory

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BGCAPP 155mm M110 H Lots			
Shaded Lots at TOCDF – Blue high percentage			
	LOT		LOT
1	EA-4-1	17	EA-4-26
2	EA-4-3	18	EA-4-27
3	EA-4-6	19	EA-4-29
4	EA-4-7	20	EA-4-30
5	EA-4-8	21	EA-4-31
6	EA-4-9	22	EA-4-32
7	EA-4-10	23	EA-4-33
8	EA-4-12	24	EA-4-34
9	EA-4-13	25	EA-4-35
10	EA-4-15	26	EA-4-37
11	EA-4-19	27	EA-4-38
12	EA-4-20	28	EA-4-39
13	EA-4-21	29	EA-4-40
14	EA-4-23	30	EA-4-41
15	EA-4-24	31	EA-4-44
16	EA-4-25		



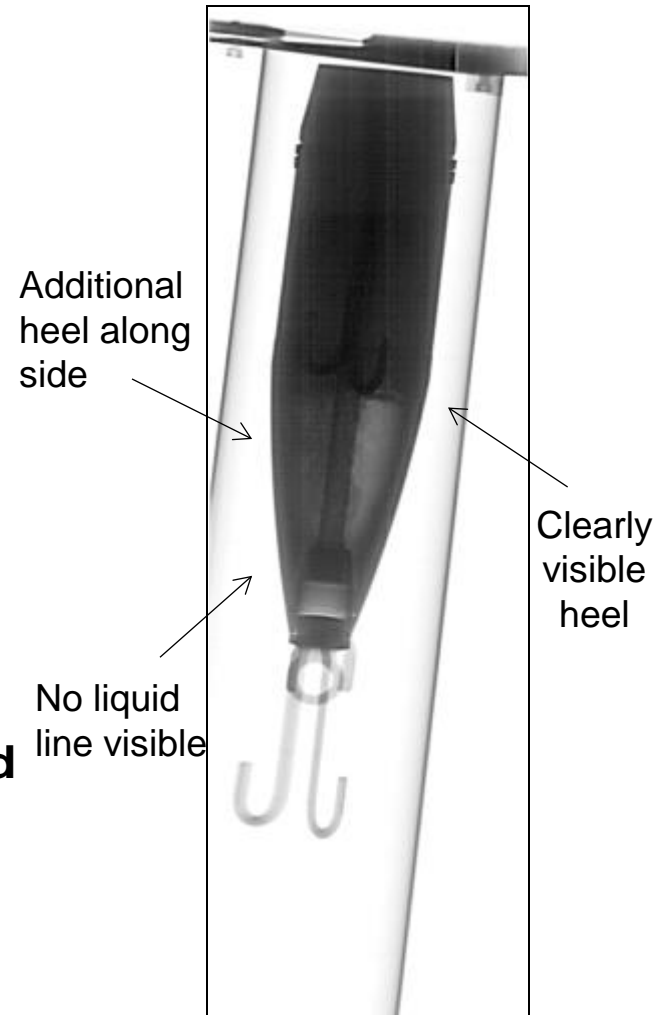


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# X-Ray Assessment (2011)

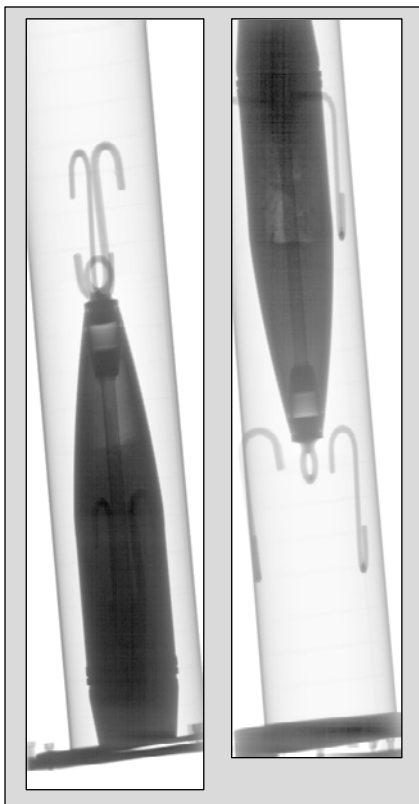
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- **Blue Grass Chemical Agent-Destruction Pilot Plant partnered with the Blue Grass Chemical Activity (BGCA) to study the potential solidification, or heel, in the mustard munitions stored at the depot**
- **All 96 mustard-filled munitions in the sample contained heel**
  - Average heel – 54.8 percent
  - Minimum heel – 15 percent
  - Some weapons were completely solidified
- **Approximately 6,100 munitions estimated to have greater than 59 percent heel**



# Three Options Considered by Stakeholders

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Images taken May 25, 2011,  
courtesy Blue Grass Chemical  
Activity.

### 1) Process problematic projectiles with current BGCAPP design/facility

- Pros: No changes to existing equipment, no additional equipment expenditure, no permit modification required
- Cons: Manual intervention required, worker safety risk increased, strain on equipment, extends mustard destruction schedule

### 2) Make design modifications to Blue Grass Chemical Agent-Destruction Pilot Plant facility

- Pros: No new permit required
- Cons: Difficult to incorporate changes after construction, some manual intervention still likely, potential increase to worker safety risk, effect on schedule unknown (facility modification and mustard destruction)

### 3) Use an explosive destruction technology to process mustard projectiles

- Pros: Worker safety improved, provides mustard destruction schedule stability
- Cons: New permit required, additional facility required



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# Stakeholder Endorsement (2012)

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- The Kentucky Chemical Demilitarization Citizens' Advisory Commission (CAC) and Chemical Destruction Community Advisory Board (CDCAB) recommends the use of an explosive destruction technology system to dispose of mustard munitions at Blue Grass Army Depot

- The CAC/CDCAB recognizes that the results of the X-ray Assessment of the mustard munitions at Blue Grass Chemical Activity reflects an extremely high probability that attempting to process these munitions in the Blue Grass Chemical Agent-Destruction Pilot Plant facility would likely result in repeated and avoidable risks to the workforce; inhibit accelerated disposal of the Kentucky stockpile; and, put Kentucky further behind in our international commitments within the context of the Chemical Weapons Convention.
- The CAC/CDCAB believes the deployment and use of the EDT at the Anniston Chemical Demilitarization Facility fulfills many of the requirements of KRS 224.50-130 (3) (a).
- The CAC/CDCAB recognizes the potential benefit of an EDT for its legacy capability in the ongoing mission of the Blue Grass Army Depot's conventional weapons activities once the chemical weapons disposal mission is completed.







# Explosive Destruction Technology (EDT) at Blue Grass

## A Partnership for Safe Chemical Weapons Destruction

- **Program Executive Office, Assembled Chemical Weapons Alternatives (PEO ACWA) determined it was appropriate to direct Bechtel Parsons Blue Grass to move forward with process to select an EDT to destroy mustard projectiles at Blue Grass**
  - Augmentation of Blue Grass Chemical Agent-Destruction Pilot Plant chemical neutralization process
- **PEO ACWA decision considerations included: Environmental Assessment and resulting Finding of No Significant Impact and stakeholder involvement**
- **With community approval, approximately 15,000 155mm mustard projectiles, with fewer than 200 in overpack containers, along with two Department of Transportation bottles containing mustard agent will be processed through the EDT**



# Explosive Destruction Technology (EDT) at Blue Grass (cont.)

## A Partnership for Safe Chemical Weapons Destruction

- Design, permitting and preparation of Site Plan Safety Submission began with first technical submittals in December 2013
- A Resource Conservation and Recovery Act Hazardous Permit Class 3 Modification Request was submitted to the Kentucky Department for Environmental Protection to support EDT use



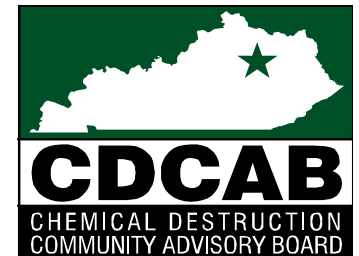


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# Stakeholder Involvement

## A Partnership for Safe Chemical Weapons Destruction

- **Kentucky Chemical Demilitarization Citizens' Advisory Commission (CAC) and Chemical Destruction Community Advisory Board (CDCAB)**
  - Blue Grass project personnel briefed the explosive destruction technology (EDT) topic at each meeting since March 2013
  - Special CAC/CDCAB public meeting to discuss the final Finding of No Significant Impact on October 23, 2013
  - Group has provided input, recommendations and/or comments on:
    - Use of a Blue Grass EDT
    - Environmental assessment
    - Selection of specific technology
    - Resource Conservation and Recovery Act permit application March 2014



# Stakeholder Involvement (cont.)

## A Partnership for Safe Chemical Weapons Destruction

- **July 2013 Environmental Assessment Public Meeting**
- **March 2014 Explosive Destruction Technology (EDT) Working Group trip to the Anniston Chemical Agent Disposal Facility to view their explosive destruction technology, the Static Detonation Chamber**
- **April 2014 EDT Permitting Public Meeting**
- **Kentucky Department for Environmental Protection**
  - 30, 60 and 90 percent design review meetings
- **Citizens' Advisory Commission/Chemical Destruction Community Advisory Board EDT Working Group**
  - Expanded discussion through this focused group
  - 30, 60 and 90 percent design review meetings
  - Nine meetings on the topic between May 2009 and March 2015



# Stakeholder Involvement (cont.)

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**“Worker safety associated with burster extraction was key in endorsing an EDT.”**

*Craig Williams, EDT Working Group Meeting, Dec. 10, 2013*



**Leslie Kaylor thanked project members for extending the invitation to Anniston, Alabama, and said it was a good opportunity. Kaylor also remarked about the systems and processes associated with the Static Detonation Chamber and how they were easily understandable.**

*From the May 6, 2014, EDT Working Group meeting notes*

**Doug Hindman thanked PEO ACWA representatives for holding a special meeting to discuss the Finding of No Significant Impact. He recognized them for going the extra mile, which he said has been characteristic of the PEO ACWA program across the years.**

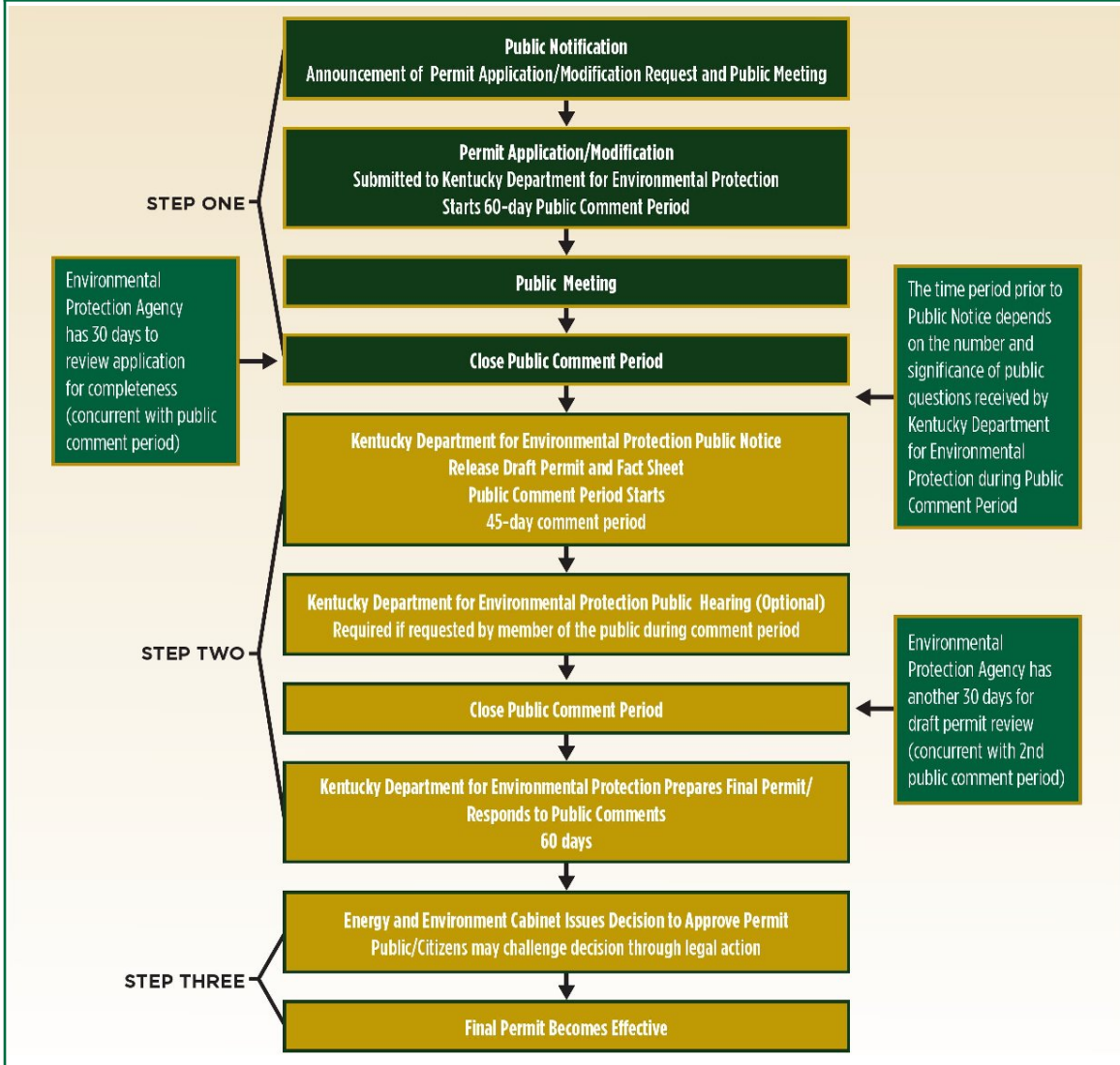
*From the Oct. 23, 2013, special CAC/CDCAB meeting to discuss the final FONSI release*





# Stakeholder Involvement in Permitting Process

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- Public notification through several local and area media vehicles
- Multiple opportunities for stakeholder input



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# EDT Progress

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- **By 2012, stakeholders committed to implementing explosive destruction technology at Blue Grass**
- **Bechtel Parson Blue Grass awarded the contract to UXB International in November 2013 for a Static Detonation Chamber**
- **Design complete March 2015**







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**Questions?**