



# Dow's Experiences with performing Site Security Vulnerability Assessment

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Tim Overton  
Process Safety Technology Center

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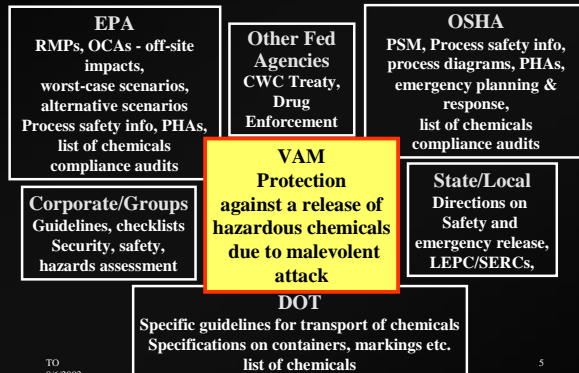
## Background

- Dow has been engaged with both Sandia and CCPS to develop and implement Security Vulnerability Assessment tools
- Sandia National Labs under contract to the Department of Justice developed a Vulnerability Assessment Methodology (VAM) for Chemical Facilities
- Dow agreed to Pilot Sandia VAM
- EPA CEPPPO office participated in Pilot
- We have now completed VA at a few sites.

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## Interactions with Other Activities

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## Pilot Site: Dow's St. Charles Operations

- Integrated Petrochemical Manufacturing Site - approximately 640 acres
- Covered by OSHA PSM and EPA RMP
- 17 RMP listed highly hazardous chemicals
- 11 covered processes
- Located just upstream from New Orleans

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## Define Scope

- Undesired Event - Release of an RMP covered chemical causing off-site casualties
- Causes - 1 Outsider & 1 Insider threat
  - + Outsider - Terrorist attack
  - + Insider - Disgruntled employee
- Focus of scope key to timely assessment
- Many lesser threats covered by these two

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## Multi-Disciplinary Team

- Process Safety Technology Center
- Emergency Services and Security
- VAM process experts - Sandia Labs
- Observer - EPA CEPPPO

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## Pre-Work

- Developed table showing what chemicals are in each covered process
- Process flowsheets identifying where 3 largest volumes of each chemical is located within the covered processes
- Chemical and volume information for 93 vessels across the site
- Planning and facility characterization steps of the assessment were started before the team arrived on site.

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## On-Site Work

- Site Survey
  - + Locate vessels on site map
  - + Understand existing security systems
- Threat Assessment - Local FBI
- Process tours to see all 93 vessels with covered chemicals
- Scenarios developed with input from process knowledgeable people

## Key Learnings

- Sandia VAM can be done in a week at a major site if properly scoped and adequate pre-work is done
- Good Process Safety Management practices will help detect and mitigate intentional attacks.
- Dow's multi-level site security plan makes good sense in light of varying levels of outside threats.

## On-Site Work

- Estimate of Likelihood of Adversary Success based upon existing security and process safety systems
  - + Outsider - Terrorist attack
  - + Insider - Disgruntled employee attack
- Development of estimated risk level
- Development of recommendations to reduce risk if appropriate (not part of pilot)

## Key Learnings

- The inherent properties (flammability) of some toxic materials provides for self-mitigation in many cases
- Intentionally creating a "Worse Case Scenario" is difficult
- A Vulnerability Assessment will help facilities prioritize spending for improved security
- Training on use of VAM was very helpful

## On-Site Work

- During Scenario development
  - + Closely located vessel volumes were combined
  - + Lower volume scenarios with little or no off-site potential were screened out reducing the number of vessels of concern from 93 to 33
  - + Additional assessment of probability of ignition of toxic materials that are also flammable resulted in identification of 6 critical target vessels with potential for significant off-site consequences

## Key Learnings

- The documents generated during the assessment should be treated as very sensitive with limited distribution
- Further enhancements of the Sandia VAM were needed (Dow submitted recommendations)
- In addition to the improvements to the VAM worksheets a users manual would be a significant help for initial users of the VAM



## Summary

- Sandia VAM is an evolving/improving tool
- Sandia VAM is not the only tool
  - + CCPS VAM (pilot opportunity)
  - + ACC Chemical Site Security Guidelines
- Potential threats are being taken seriously
- Improving an already sound security program
- Assessment of "all" chemical facilities will take a significant investment of resources and time

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