



# Hazards Assessment Working Group

## EPHA Consequence Modeling Fidelity

OR

*Does your calculation really represent the situation you should be modeling?*

Jim Jamison  
SAIC, Richland WA



# EPHA Consequence Modeling

## Observation:

Modeling choices that do not reflect the physical reality of the expected release & dispersion conditions.



# EPHA Consequence Modeling

- Text says one thing, calculation says another
- Technically unjustified models/assumptions
- Grossly conservative approach used when others justified by the circumstances



# EPHA Consequence Modeling

## Fire releases

- No basis for assumed fuel values
- No consideration of building/surface effects
  - Elevated release (unrealistic representation)
  - Minimal consequences (non-conservative)
  - Ground level release (at least partial) expected in many/most fires



# EPHA Consequence Modeling

## Explosive releases

- Same charge (TNT equiv.) used for all
- Open-field conditions implicit in model
- Larger charge → higher release → lower consequences



# EPHA Consequence Modeling

## Dense gas effects

- Dense gas model used although conditions do not suggest dense gas behavior.
  - Small quantity, slow release
  - Elevated release
  - Turbulent, diluted release path



# EPHA Consequence Modeling

## Unnecessary conservatism

- “Open country” terrain model for built-up areas
- Small amounts of chemicals released in large fires
- Point source for releases in/near buildings
- Destruction/conversion of reactive chemicals in fire or air ignored



# EPHA Consequence Modeling

## Conclusions

- All sites confront same modeling issues
- Sites need to:
  - Apply “Ho-Ho” test to individual analyses
  - Share “best practices”
- HA subcommittee should have role in identifying “best practices”