EMERGENCY MANAGEMENT ROUNDUP

EXPECT THE UNEXPECTED

Timely Initial Assessment (TIA) Tool and Its Benefit to Emergency Response

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EMERGENCY MANAGEMENT ISSUES

EMERGENCY MANAGEMENT ROUNDUP

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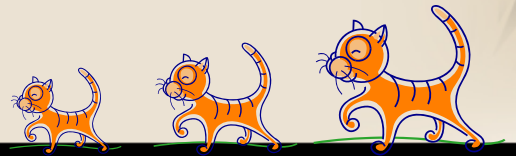
Consequence Assessment Team (CAT)

- Sandia National Laboratories / New Mexico (SNL/NM)
- Perform emergency response consequence assessments
- Suite of models used
- Susan Vosburg - lead



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Consequence Assessment Phases:

- Activation
- **Timely Initial Assessment (TIA)**
- Ongoing Assessments
- Recovery

Why was the TIA Tool Created?

- Need:
  - Computer based system (simple User Interface)
  - Rapid access to Hazard Assessment (HA) and Emergency Action Level (EAL) consequences
  - Ability to:
    - Obtain key information for consequence assessment
    - Adjust HA and EAL consequences
      - Based on more realistic input conditions
    - Obtain key information based on modified consequences

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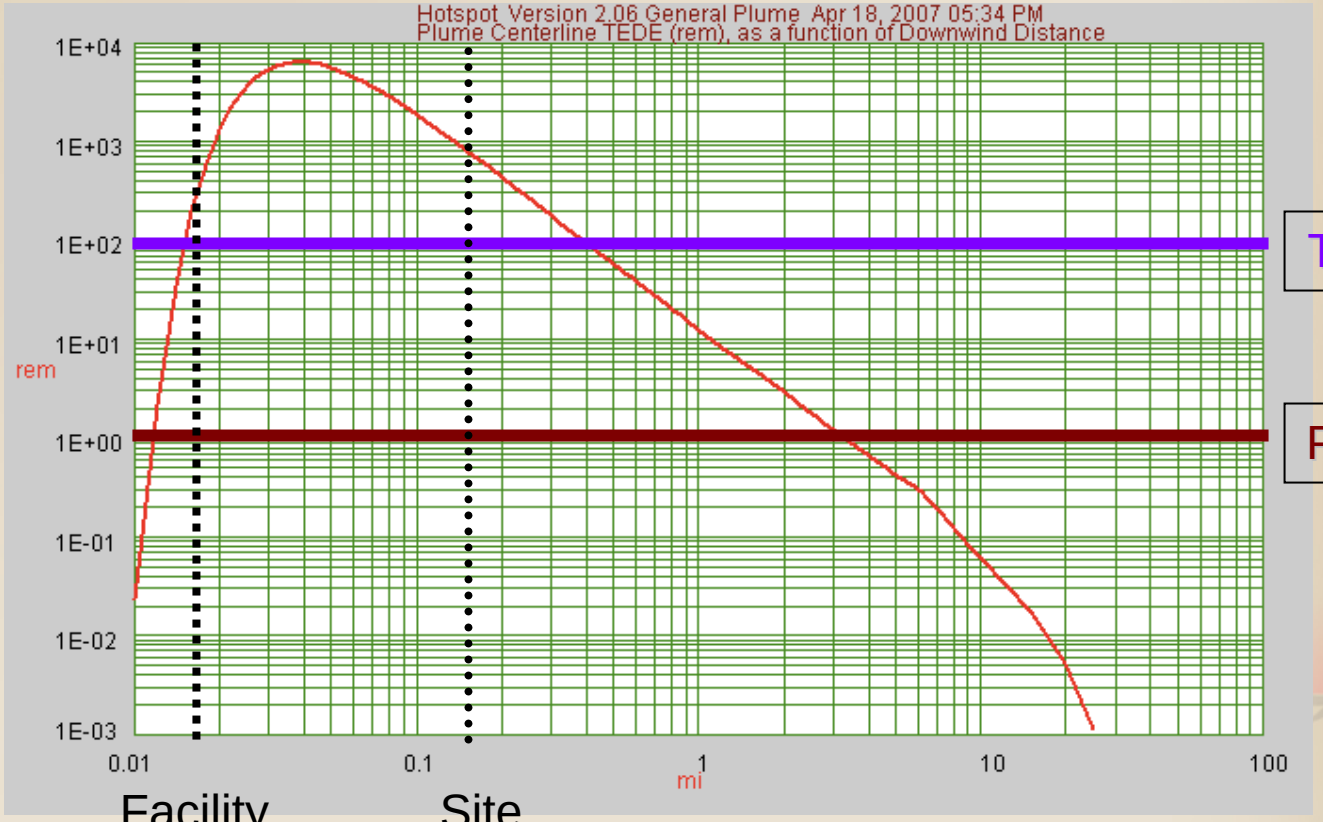
Adjustment to EAL & HA Results



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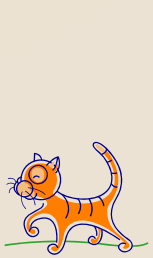
Key Information for Consequence Assessment:

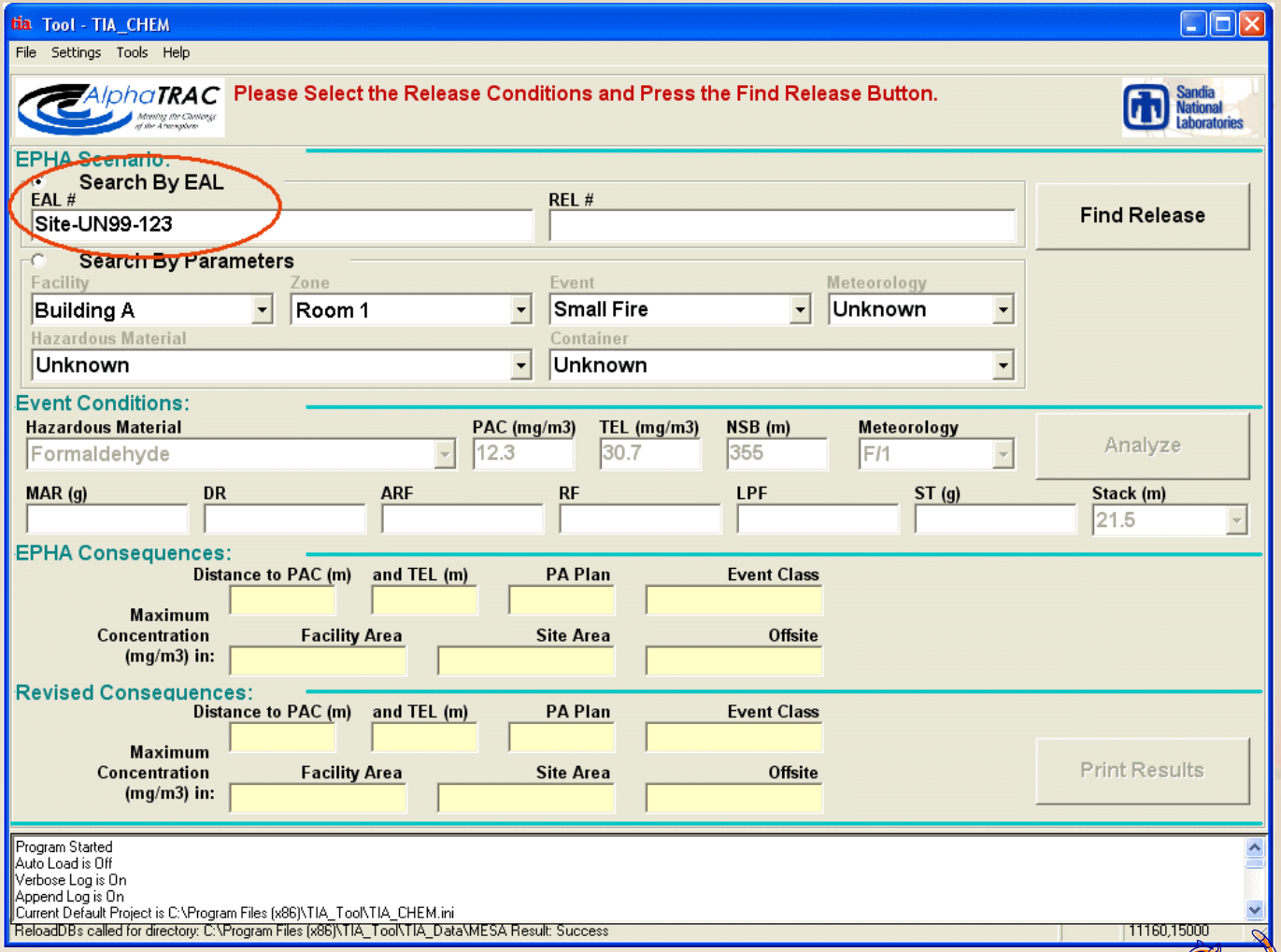
- PAC and TEL thresholds
- Model results for event:
  - Distance to PAC and TEL thresholds
  - Site boundary distance
  - Projected emergency classification
    - Alert, Site Area Emergency, General Emergency
  - Protective action plan
  - Maximum consequences in Facility, Site, and Offsite areas

Ways to Obtain HA & EAL Consequences:

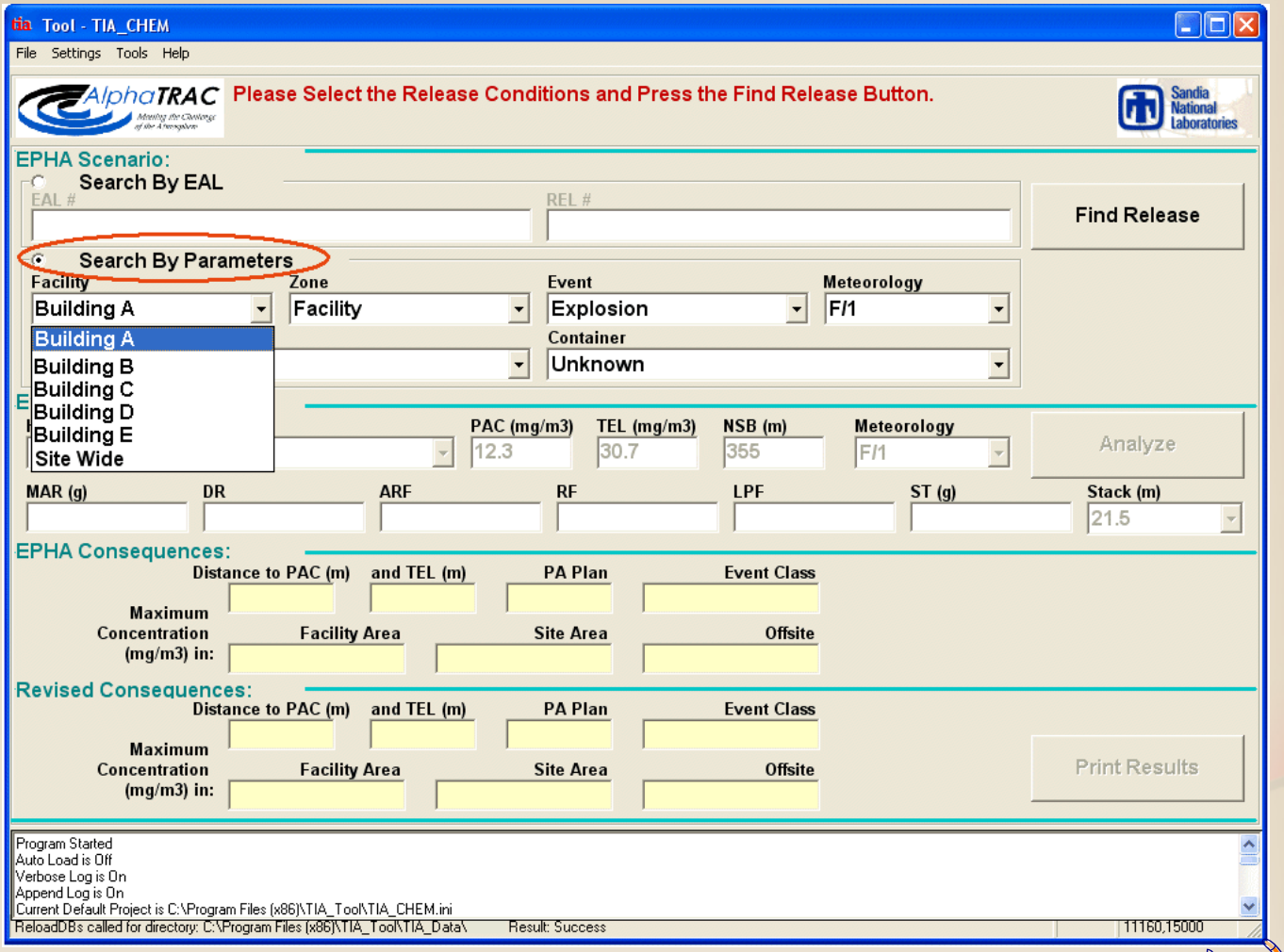
- EAL number
- Scenario parameters:
  - Facility
  - Zone
  - Substance
  - Container
  - Event



How it Works - Search by EAL



How it Works - Search by Parameter



How it Works - Find release

Tool - TIA_CHEM

File Settings Tools Help

AlphaTRAC

Modify the Release Parameters and Press Analyze to Recalculate the Consequences.

Sandia National Laboratories

EPHA Scenario:

Search By EAL

EAL #

REL # SP-EX-MX-HFC-0123

Start Over

Search By Parameters

Facility	Zone	Event	Meteorology
Building A	Facility	Explosion	Unknown

Hazardous Material: Hydrofluoric Acid (70%)

Container: cylinder 4lb

Event Conditions:

Hazardous Material	PAC (mg/m3)	TEL (mg/m3)	NSB (m)	Meteorology
Hydrofluoric Acid (70%)	16	41	470	F/1

Analyze

MAR (g)	DR	ARF	RF	LPF	ST (g)	Stack (m)
1.810E+03	1.000E+00	1.000E+00	1.000E+00	1.000E+00	1.810E+03	0

EPHA Consequences:

	Distance to PAC (m)	and TEL (m)	PA Plan	Event Class
	1.163E+02	8.907E+01	2	SAE

Maximum Concentration (mg/m3) in:	Facility Area	Site Area	Offsite
	1.647E+02	5.249E+00	1.160E+00

Revised Consequences:

	Distance to PAC (m)	and TEL (m)	PA Plan	Event Class

Maximum Concentration (mg/m3) in:	Facility Area	Site Area	Offsite

Print Results

Program Started
Auto Load is Off
Verbose Log is On
Append Log is On
Current Default Project is C:\Program Files (x86)\TIA_Tool\TIA_CHEM.ini
ReloadDBs called for directory: C:\Program Files (x86)\TIA_Tool\TIA_Data\4CHEM Result: Success

11160,15000

Adjust Consequences by:

- Event
- Weather conditions
  - Worst-case
  - Typical
  - High wind
- Site boundary distance
  - User entry affects emergency classification
- Source term

Source Term Adjustment

- Material at Risk (MAR)
- Damage Ration (DR)
- Airborne Release Fraction (ARF)
- Respirable Fraction (RF)
- Leak Path Factor (LPF)
- Source Term (ST)

$$ST = MAR \times DR \times ARF \times RF \times LPF$$

How it Works - Modify & Analyze

Tool - TIA_CHEM

File Settings Tools Help

AlphaTRAC — Analyzer Completed Successfully - Please Review the Results. — Sandia National Laboratories

EPHA Scenario:

Search By EAL

EAL #

REL # SP-EX-MX-HFC-0264

Start Over

Search By Parameters

Facility	Zone	Event	Meteorology
Building A	Facility	Explosion	Unknown

Hazardous Material: Hydrofluoric Acid (70%)

Container: cylinder 4lb

Event Conditions:

Hazardous Material	PAC (mg/m3)	TEL (mg/m3)	NSB (m)	Meteorology
Hydrofluoric Acid (70%)	16	41	470	F/1

Analyze

MAR (g)	DR	ARF	RF	LPF	ST (g)	Stack (m)
9.050E+02	1.000E+00	1.000E+00	1.000E+00	1.000E+00	9.050E+02	0

EPHA Consequences:

	Distance to PAC (m)	and TEL (m)	PA Plan	Event Class
	1.163E+02	8.907E+01	2	SAE

Maximum Concentration (mg/m3) in:	Facility Area	Site Area	Offsite
	1.647E+02	5.249E+00	1.160E+00

Revised Consequences:

	Distance to PAC (m)	and TEL (m)	PA Plan	Event Class
	9.336E+01	6.949E+01	1	Alert

Maximum Concentration (mg/m3) in:	Facility Area	Site Area	Offsite
	8.236E+01	2.625E+00	5.801E-01

Print Results

Program Started
Auto Load is Off
Verbose Log is On
Append Log is On
Current Default Project is C:\Program Files (x86)\TIA_Tool\TIA_CHEM.ini
ReloadDBs called for directory: C:\Program Files (x86)\TIA_Tool\TIA_Data\4CHEM Result: Success

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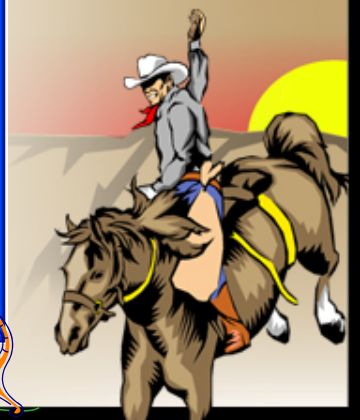
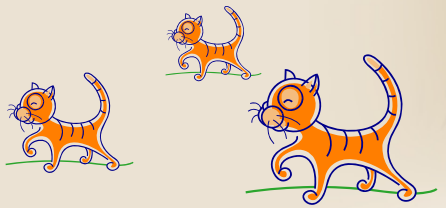


Additional Features

- Display of additional scenario input data
  - Stack height
- Chemical mixture surrogate source term program
  - Uses SCAPA methodology
  - Provides way to model chemical mixtures
    - One source value for use in EPICode



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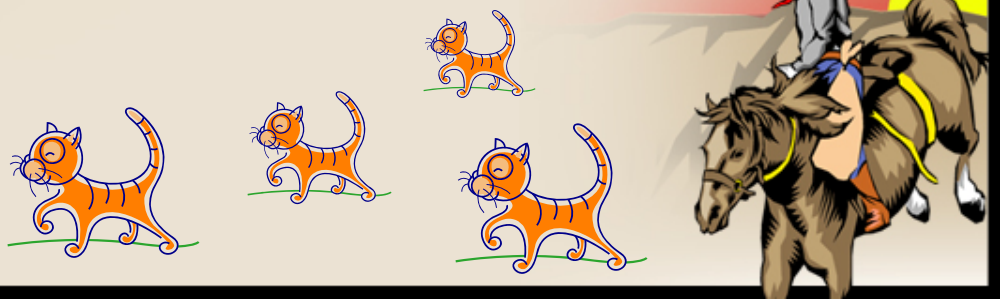
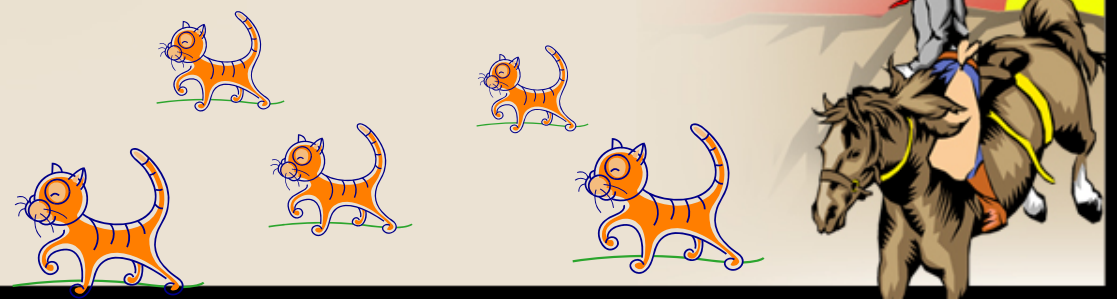
Uses

- Currently used by SNL/NM CAT
- Emergencies
- Planning
- Exercises



Future Capabilities

- Multiple meteorological conditions- beyond typical, and worst case
- Use with non-straight line Gaussian models
- Probabilistic hazards assessments
- Tie into radiological mixture tool
- Install with Incident Command



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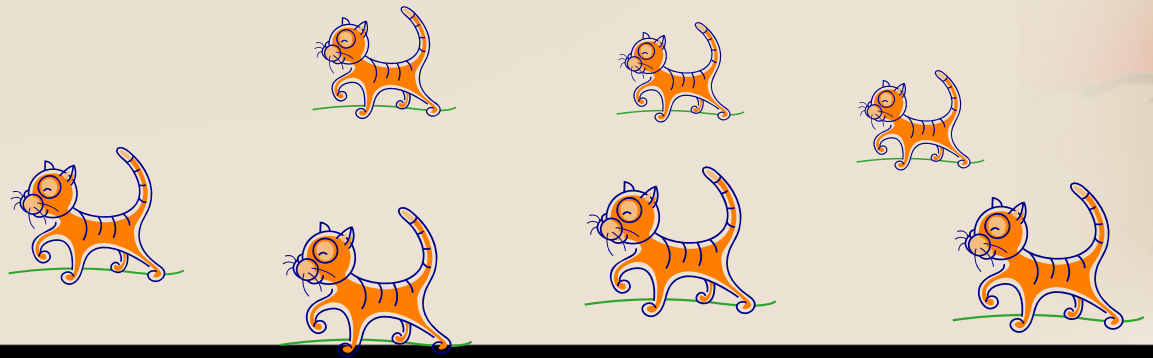
Thank you!

Questions



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Acknowledgement

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