

IMESA FR

Institute of Makers of Explosives Safety Analysis for Risk

What is IMESA FR?

Institute of Makers of Explosives Safety Analysis for Risk (IMESA FR) is a probabilistic risk assessment tool used to calculate risk to personnel from explosives facilities. This tool is a supplement to the longstanding American Table of Distances (ATD) or other Quantity-Distance regulations. Whereas the ATD provides a level of safety based on explosives quantity and distance, IMESA FR determines a level of safety based upon risk. In addition to explosives quantity and distance, IMESA FR uses the donor structure, the activity at the donor, the structure of the exposed sites, and the duration of personnel exposure to determine the level of safety.

Why was IMESA FR developed?

IMESA FR was developed to provide a more comprehensive assessment of the overall risk of explosives operations. The commercial explosives industry in the United States uses the ATD as the basis for safe siting of explosives storage facilities. ATD siting involves the evaluation of a specific magazine and inhabited building or public highway, which are referred to as a Potential Explosion Site (PES)/Exposed Site (ES) pair in IMESA FR. This evaluation yields the recommended separation distance based on the factors that affect risk, including whether a barricade exists. Although the same criteria can be applied to explosives manufacturing operations, the ATD was intended for use in limited permanent storage situations. In addition to permanent storage situations, IMESA FR accounts for other activities such as manufacturing, assembly, and loading and unloading.

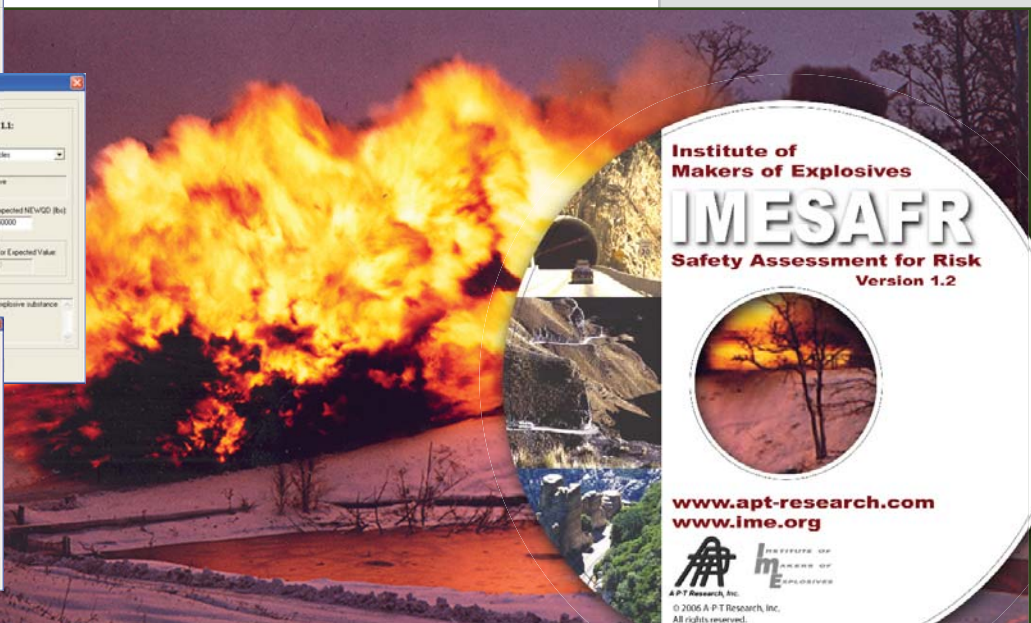
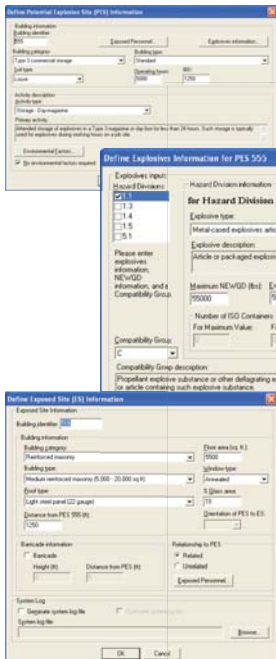
System Requirements

IMESA FR is fully compatible with Windows XP Professional, Vista variations (except Home Edition), & Windows 7. Microsoft .NET Framework 1.1 or greater is required to generate reports & Adobe Acrobat 4.0 or above is required to view them. The Java Runtime Environment 1.6 or later is needed to run the User Define Explosive Article Wizard.

Training

Training will be provided on a periodic basis at APT Research, Inc., in Huntsville, Alabama. Please check the APT website for the course schedule (www.apr-research.com).

On-site training courses can be arranged, as well as courses that run in conjunction with conferences and meetings.



Institute of
Makers of Explosives
IMESA FR
Safety Assessment for Risk
Version 1.2

www.apr-research.com
www.ime.org



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What data is needed to run IMESAFR?

Since the IMESAFR model is menu-driven, the user must make judgments as to which menu item best fits the situation under analysis. These judgments require knowledge of the explosives and the building construction for the PES and ES, and the annual exposure of the personnel.

Who should use IMESAFR?

The IMESAFR model was designed by safety professionals to assess explosives risk. The individual should have some knowledge of the application of ATD principles, explosives Hazard Class/Divisions, explosives quantity, and information concerning the facilities and personnel surrounding the PES and the ES.

Where can I get it?

IMESAFR was developed by the IME in conjunction with APT Research, Inc. Contact IME or APT for a copy.

Cost

IME members: \$600; Others: \$1200.

The screenshot displays the IMESAFR software interface. The main window is titled "User Settings for ES 506". It is divided into several sections:

- General Information:**
 - ES Building Type: Medium 1-3 story reinforced masonry (office/commercial) (5,000 - 20,000 sq ft)
 - Default Roof Type: Light steel panel (22 gauge)
 - Wall Type (not user selectable): 8" reinforced masonry
 - Window Type: Annealed
 - Glass Area: 10 percent
 - Floor Area: 5500 sq ft
 - Distance from PES: 1250 ft
- Exposed Personnel - Related:**

Group	Number of People	Hours Present	% Time Expl/People Present	Average Exposure
1	40	2000.00	100	1.6e+001
- Uncertainty for ES Exposed Personnel:**
 - User confidence level in exposure inputs: Confident
 - Daily Variation in Exposure Upper Limit: 20
 - Daily Variation in Exposure Lower Limit: 0
 - Correlation of amount of explosives to number of people exposed on a periodic cycle: No correlation
 - Correlation of PES activity varying on a periodic schedule to personnel exposure: No correlation
- Output Results for PES 555/ES 506 pair:**

Hazard Division: 1.1 (Baseline)

Individual Risk Results

Maximum IIEWOD		Expected IIEWOD	
Maximum P(f) Worker:	0.0e+000	Maximum P(f) Worker:	0.0e+000
Maximum P(f) Related:	2.9e-009	Maximum P(f) Related:	1.3e-009
Maximum P(maj) Related:	9.8e-008	Maximum P(maj) Related:	6.5e-008
Maximum P(mini) Related:	1.8e-006	Maximum P(mini) Related:	5.8e-007

Group Risk Results



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