

# SAFER

*Safety Assessment For Explosives Risk*

## What is SAFER?

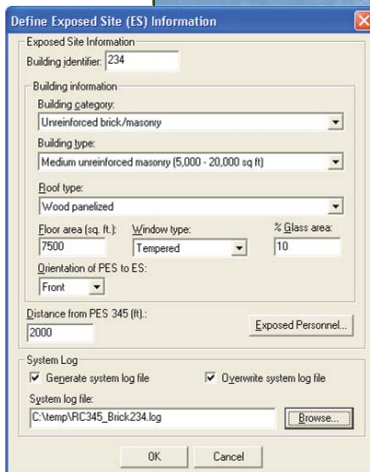
SAFER is a software model that was developed by a joint Services and DoD Explosives Safety Board (DDESB) Working Group. SAFER performs quantitative risk analysis to determine risk to people from a potential explosion site (PES) by conducting a sequential calculation of probability of event, explosives effects, and personnel exposure. SAFER can be used to assess the risks to people in inhabited building distance (IBD), public traffic route (PTR), and intraline distance scenarios.

## Why was SAFER developed?

The U.S. currently uses Quantity-Distance (Q-D) criteria as the basis for siting explosives facilities. The Q-D method considers explosives quantity, Hazard Division, and PES type to determine a safe separation distance. The SAFER model was developed to assess risks using additional considerations such as the type of activity at the PES, the number of people at the exposed site (ES), and the building construction of the ES.

## System Requirements

- Intel Pentium processor 300 MHz (450 MHz recommended)
- Microsoft Windows 98, Windows NT 4.0, Windows 2000, or Windows XP
- 32 MB of RAM (64 MB recommended)
- 30 MB of available hard-disk space
- CD-ROM drive



**Define Exposed Site (ES) Information**

Exposed Site Information  
Building identifier: 234

Building information  
Building category: Unreinforced brick/masonry  
Building type: Medium unreinforced masonry (5,000 - 20,000 sq ft)  
Roof type: Wood panelized

Floor area (sq. ft.): 7500 Window type: Tempered % Glass area: 10  
Orientation of PES to ES: Front

Distance from PES 345 (ft): 2000 Exposed Personnel...

System Log  
 Generate system log file  Overwrite system log file  
System log file: C:\temp\RC345\_Brick234.log [Browse...]

OK Cancel



## What data do you need to run SAFER?

Since the SAFER 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 personnel demographics.

## Who should use SAFER?

The SAFER model was designed for safety professionals. The individual should have some knowledge of the application of Q-D principles, explosives Hazard Class/Divisions, explosives quantity, and information concerning the facilities and personnel surrounding the PES and the ES.

## Is SAFER approved for use by the DDESB?

Yes, the DDESB approved the trial use of the SAFER model and acceptance criteria for siting waived PES's in December 1999. The trial period ended in December 2004.

## How do I get a copy of SAFER?

Interested DoD personnel should contact:

- Army – Lyn Little, lyn.little@DAC.army.mil
- Navy – Gary Hogue, gary.hogue@navy.mil
- Air Force – Eric Olson, eric.olson@kirtland.af.mil
- Marines – George Morrison, morrisonge@mcsc.usmc.mil
- DDESB – Dr. Jerry Ward, Jerry.Ward@ddeb.osd.mil

The screenshot shows the SAFER For Siting software interface. The window title is "SAFER For Siting - Example.sfs". The menu bar includes File, Edit, View, Tools, Window, and Help. The toolbar contains icons for file operations and analysis. The left pane shows a tree view of "SAFER for Siting" with a list of PES and ES numbers (234-248). The main pane is divided into two sections: "User Settings for PES 348" and "Output Results for PES 348".

**User Settings for PES 348**

**Max distance from PES in which the P(f) for ESs drops below  $1 \times 10^{-8}$ : 1491 ft**

**General Information:**

Number of people at PES:	100
Building Type:	Pre-engineered metal building (PEMB)
Soil Type:	Rock or hard clay
Activity Type:	Demilitarization

**Scaling Factors selected:**

Outside Continental United States (OCONUS) operations in support of wartime actions  
**A scaling factor of 10 will be applied.**

**Output Results for PES 348**

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**Hazard Division: 1.2.1**

Sited NEWQD		Expected NEWQD	
Maximum P(f) Public:	9.8e-009 (ES 246)	Maximum P(f) Public:	1.0e-009 (ES 246)
P(f) Public Criteria:	1.0e-006		
Maximum P(f) Related:	0.0e+000	Maximum P(f) Related:	0.0e+000
P(f) Related Criteria:	1.0e-004		
E(f) Public:	6.9e-005	E(f) Public:	7.1e-006
E(f) Public Criteria:	1.0e-005		
E(f) Related:	0.0e+000	E(f) Related:	0.0e+000
E(f) Related Criteria:	1.0e-003		

Ready NUM

### APT Point of Contact

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