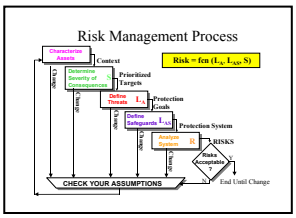
Risk Assessment Methodology for Chemical Facilities (RAM-CF™)

Fact Sheet



Description of the Tool

The Risk Assessment Methodology for Chemical Facilities, RAM-CF™, is a systematic, risk-based approach used to evaluate chemical or petrochemical facilities (or any facility which has hazardous chemicals present) with respect to potential malevolent actions (i.e. terrorists or criminals) that could cause an undesirable event such as airborne releases of hazardous chemicals which would compromise the integrity of the facility, cause serious injuries and/or fatalities among facility employees, contaminate adjoining areas, and cause injuries and/or fatalities among adjoining populations.

Features

In the RAM-CF™ approach, **Risk** is a function of **S, L_A,** and **L_{AS}**, where **S** is the severity of consequence of an event, **L_A** is the adversary attack potential and **L_{AS}** likelihood of adversary success in causing an undesired event. The RAM-CF™ is not a quantitative analysis but, rather, compares relative security risks. If the risks are deemed too high, recommendations can be developed for measures to reduce the risks. The conduct of the RAM-CF™ involves a team effort. The team lead or facilitator is the primary link to the facility. The team involves personnel who are familiar with the facility operations and the facility's risk management and process safety plans, security (both physical and cyber), chemical process safety and emergency response measures. The team lead also interfaces with the local law enforcement agencies (i.e. City Police, County Sheriff, Fire Departments, FBI, Coast Guard) to help identify potential threats to the facility and response capabilities. The RAM-CF™ workbook is a manual process involving approximately forty worksheets and it also has been automated. Using these worksheets the facility will first identify the most critical areas, determine the components of risk and finally a relative risk value. If the risk is too high then additional steps can be taken to reduce this risk.

Applicability

The RAM-CF™ was developed in cooperation with the chemical industry and government agencies (i.e. DOJ's National Institute of Justice, EPA's Chemical Emergency Preparedness and Prevention Office). It is one of the primary security VA tools being used within the chemical industry and has been approved by the American Chemical Council and other chemical/petrochemical associations for use by their members. The RAM-CF™ is one of the most rigorous security risk assessment tools currently being used to evaluate chemical facilities.

The RAM-CF™ is designed as a stand-alone security tool but should be used with other safety and hazard analysis tools. The RAM-CF™ focuses primarily on physical security at chemical facilities with a secondary emphasis on security issues associated with the transportation of hazardous chemicals and electronic access to chemical process control systems. Although the primary focus of RAM-CF™ is the undesired event of off-site impact from toxic or flammable substances, it can also be used to address other undesired events such as theft, product tampering, loss-of-production or property damage. The RAM-CF™ helps a facility to focus on the most critical areas and incorporates appropriate security, safety, mitigation and emergency response measures that could prevent or mitigate the consequences of a successful attack.

Availability

The RAM-CF™ workbook is a controlled distribution Official Use Only document. Sandia controls the distribution of the RAM-CF™ workbook through licensing agreements for non-commercial and commercial users. Over twenty companies have received commercial licenses for RAM-CF™. Training classes are available for users of the RAM-CF™ workbook. Well over three hundred organizations (chemical companies and associations, government agencies) have been provided the RAM-CF™ workbook.

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