

Center for Chemical Process Safety - Security Vulnerability Enterprise Screening Tool

INTRODUCTION:

This tool, in the next four spreadsheets, has been prepared by a CCPS Committee to facilitate the prioritization of facilities manufacturing or handling chemicals within a corporation prior to conducting a Security Vulnerability Analysis (SVA). This tool is designed to meet the expectations set by the American Chemistry Council (ACC) for use by its member companies to complete the prioritization of the facilities within their enterprise.

The structure of this tool is compatible with the ACC screening/prioritization process for RMP Program 2 and Program 3 covered facilities; however, additional methods have also been included for the **optional** use by companies in performing relative prioritization of security vulnerabilities for non-RMP Program 2 or 3 covered facilities.

INSTRUCTIONS:

RMP Program 2 & 3 sites:

For RMP Program 2 & 3 sites, the prioritization process is designed to build upon data already available from the RMP submittal reports to prioritize the order of performing security vulnerability analysis. For these sites, the company should utilize the existing data regarding end-point receptors and population within the calculated radius of the end-point receptor to categorize each RMP Worst Case scenario in terms of relative Severity of a Attack should a successful terrorist attack be able to create the "Worst Case" scenario as submitted in the RMP submittal. In addition to the Severity of Attack, the company should rate the degree of difficulty in completing a successful attack and to describe any other factors which would make the equipment described in the RMP scenario a likely Target for Attack as described in the Assessment Factors for RMP Site tab of this workbook.

The "Severity of Attack", "Difficulty of Attack, and "Other Factors" values should be entered for each site in the Vulnerability Analysis Matrix tab of this spreadsheet.

NON RMP Program 2 & 3 sites (or scenarios not previously addressed in the RMP submittal which could have a more severe consequence):

For non-RMP Program 2 & 3 sites (or scenarios not considered in the RMP reports), there are two alternative methods described in the Assessment Factor - NON RMP Site tab of this spreadsheet. If it is relative easy to estimate the distance to end-point receptors and the population within the calculated radius of the end-point receptor (in a similar method as was used for RMP submittals) for these sites and scenarios, then the same process of selecting a relative Severity of Attack, "Difficulty of Attack, and "Other Factors" values should be entered for each site in the Vulnerability Analysis Matrix tab of this spreadsheet.

When it is difficult to calculate the Severity of Attack using the methods used for RMP sites, an additional method has been provided which utilizes data regarding the inherent properties of the chemical (as tabulated in the Material Factor Table) and the method or quantities which these described in the Assessment Factors for NON-RMP sites (Alternative #2), a relative priority (in terms of Tier 1, 2, 3, or 4) can be estimated.

Vulnerability Analysis Matrix

		RMP Program 2 & 3 SITES				NON RMP SITES & Unique Scenarios	
SITE	SCENARIO	RMP Site	1. Relative Severity of Attack	2. Relative Difficulty of Attack	3. Other Factors related to Target Attractiveness	Security Hazard Index Calculation	ACC Tier for performing Vulnerability Analysis
Specify the Location of the facility	For the initial screening per ACC requirements, only the most severe "Worst Case" scenario needs to be considered. However, when completing the FULL SVA - the "Worst Case" scenario for each RMP (or similar) chemical should be considered. Therefore, some companies may wish to go ahead and collect information on those additional scenarios while performing the initial screening.	RMP Program 2 or 3 Site? (YES/NO)	Relative Severity of Attack will be quantified into 4 different categories for each site by the potential population density impacted by attack utilizing the radius of potential impact as calculated by EPA definition for RMP "worst case" scenario	Relative Difficulty of Attack will be quantified into 4 different categories for each site by the level of difficulty and resources required to accomplish a successful attack with consequences equal to or more severe than the EPA RMP "worst case" scenario.	Relative Attractiveness of the site as a Target for Attack will be quantified into 4 different categories based upon factors such as: Location of facility near a national landmark or critical infrastructure, Proximity to national media centers, a successful attack would disrupt a critical material supply, or other similar reasons		<p>ACC Tier for Performing Vulnerability Analysis</p> <p>For NON-RMP site, an Alternative Severity of Attack may be assigned based upon the good engineering judgement of the company for an attack resulting in the release of NON-RMP covered chemical which could have significant off-site consequences of the magnitude equivalent to a RMP Program 2 or 3 chemical. (For example, chemicals listed on the CWC list or FBI list of highly hazardous chemicals). As an OPTIONAL method for assigning these Tiers to Non-RMP facilities - review the tab labeled Assess Factors - NON RMP Site and Material Factors Table.</p> <p>For RMP Covered Sites, based upon the good engineering judgement of the company an estimate of the relative off-site consequences from attack upon multiple adjacent pieces of equipment.</p>
Someplace, USA	Hazardous Material	YES	4	3	4	11	Tier 1
Anywhere, USA	Polymers	NO				0	Tier 4
(Site 3)						0	
(Site 4)						0	
(Site 5)						0	
(Site 6)						0	
(Site 7)						0	
(Site 8)						0	
(Site 9)						0	
(Site 10)						0	
(Site 11)						0	
(Site 12)						0	
(Site 13)						0	
(Site 14)						0	
(Site 15)						0	
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(Site 28)						0	
(Site 29)						0	
(Site 30)						0	
(Site 31)						0	
(Site 32)						0	
(Site 33)						0	
(Site 34)						0	
(Site 35)						0	
(Site 36)						0	
(Site 37)						0	
(Site 38)						0	
(Site 39)						0	

Insert extra lines above this line. (If additional lines are needed for additional sites, insert lines above this line)

* Good Engineering Judgment - For any "Alternative" Severity of Attack scenarios, the relative severity of attack shall be estimated by individuals familiar with EPA RMP calculations and the approximate down-wind distances of ERPG-3 chemical thresholds in the event of a "worst case" scenario. There is not an expectation that dispersion calculations or other rigorous estimating techniques be utilized for these assignment of Severity of Attack factors.

Summary:		% of Total
Tier 1 Sites	1	50%
Tier 2 Sites	0	0%
Tier 3 Sites	0	0%
Tier 4 Sites	1	50%
Total:	2	

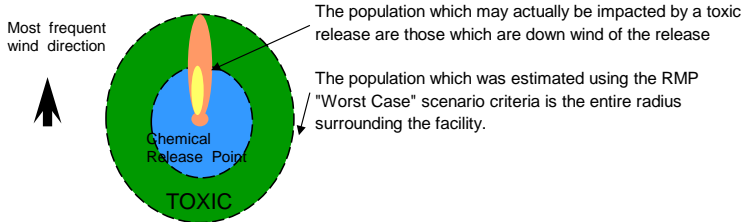
Factors: Relative Severity of Attack Definition Table:

Relative Severity of Attack will be quantified into 4 different categories for each site by the potential population density living within the radius of potential impact as calculated by EPA definition for RMP "worst case" scenario

	Toxic Scenarios	Flammable Scenarios
1	Up to 1,000	Up to 100
2	1,000 to 10,000	100 to 1,000
3	10,000 to 100,000	1,000 to 10,000
4	100,000 or greater	10,000 or greater

<--Minimum value for RMP Program 2 & 3 Sites

Relative Severity of Toxic scenarios are classified at one order of magnitude higher population levels due to the fact that the impact of toxic release will be limited to those downwind which is a small fraction of the overall population count included in the RMP submittal.



Relative Difficulty of Attack Definition Table:

	Description and factors which influence the likelihood of attack	Examples:
1	The scenario could be caused by a successful attack, which would require a well-planned and coordinated series of events involving several individuals with special knowledge/training and breaching several independent security levels of protection.	Hijacking a commercial aircraft; organized paramilitary attack within a facility, etc.
2	The scenario could be caused by a successful attack, which could be accomplished by a small group of individuals with equipment or materials available to organized terrorist organizations (or an insider with special knowledge of the facility), and does require access to restricted access areas.	Use of explosive materials within the plant boundaries; use of control system to override protective layers via access to process control system.
3	The scenario could be caused by a successful attack, which could be accomplished by a small group of individuals with equipment or materials available to organized terrorist organizations, but does not require access to restricted access areas.	Use of explosives materials from outside the plant boundaries;
4	The scenario could be caused by a successful attack accomplished by a single individual with readily available equipment or materials	The creation of a reactive chemicals incident via connection of a water hose; Rifle shot from outside of fenceline.

Other factors which influence "Attractiveness" of the Target

	Description and factors which influence the attractiveness of target to terrorists
1	A successful attack is unlikely to cause disruption to local economy or local infrastructure. Therefore, an attack is unlikely to gain significant media attention.
2	A successful attack could cause local evacuations, disruption to local economy, or disruption of local infrastructure. Would receive primarily local media attention.
3	A successful attack could impact regional economy, disruption of regional infrastructure, or cause extensive property damage. Would likely receive some national media attention.
4	Facility located adjacent to a major recognizable landmark (e.g., Washington DC, NYC). A successful attack could impact national economy, could disrupt a major supply of a critical material, or disrupt national infrastructure. Attack certain to receive substantial national media

Alternative Severity Factor Method 1: **ALTERNATIVE Relative Severity of Attack Definition Table:**

For NON-RMP covered facilities (or for significant off-site consequence scenarios of NON-RMP covered chemicals) the site may still wish to **estimate** the Relative Severity of Attack utilizing a similar methodology as given above for RMP sites and chemicals. The following table is given for those scenarios whenever the radius of potential exposure can be **estimated** using good engineering judgment and a knowledge of the EPA RMP calculation methodologies.

	Toxic Scenarios	Flammable Scenarios
0	Less than 100	Less than 10
1	Up to 1,000	Up to 100
2	1,000 to 10,000	100 to 1,000
3	10,000 to 100,000	1,000 to 10,000
4	100,000 or greater	10,000 or greater

<--Applicable to NON-RMP Program 2 & 3 sites only

The **Difficulty of Attack** and **Other factors** which make a target Attractive could be calculated in a similar manner as was shown for the RMP sites to get an overall Security Hazard Index and Tier level for the site.

Alternative Security Hazard Index Method 2: **ALTERNATIVE Security Hazard Index based upon Material Factor and Storage Method :**

For scenarios when utilizing estimates of off-site consequences in EPA RMP analogies is inappropriate, the company may wish to consider the following table. (For example, small quantities of CWC and FBI listed chemicals or product contamination potentials)

TIER	Material Factor (See Material Factor Table)	Quantities / Packaging Options
4	Less than 5	Stored on premises of facility only in fixed tanks
3	Less than 5	Stored on premises of facility in large quantities or packaged for shipment in easily transportable and/or hidden quantities
2	5 to 10	Stored on premises of facility only in fixed tanks
1	5 to 10	Stored on premises of facility in large quantities or packaged for shipment in easily transportable and/or hidden quantities
1	Greater than 10	Stored in any quantity which could result in serious off-site consequences if released.

