Appendix B Risk-Based Targeting Matrices and Examples

Risk-Based Targeting Matrices and Examples

Within the risk based targeting scheme, emphasis has been placed on higher toxicity pesticides and higher risk worker protection related activities. A combination of factors are used to identify products, uses, and sites that pose the greater potential risk to workers, applicators, and handlers. These factors for targeting use inspections include:

- product toxicity
- identification of the crops which are typically associated with intensive hand labor (greater exposure to workers)
- previous incidents reported to a state for a particular product's active ingredient
- history of compliance problems (if any) at a site
- the farm type and number of workers

Use of these factors obviously necessitates that the state have information in these areas. If a state does not have any information on one particular factor, for example, that factor could be eliminated from the risk-based (R-B) matrix if necessary.

Using these factors, the risk-based targeting matrix was developed for prioritizing use inspections (See page B-4). A recommended targeting matrix for prioritizing producer establishment inspections using a sub-set of similar factors is also outlined on page B-15.

Each potential inspection site is placed into one of three tiers (or categories) based on how they relate to each of the five factors. Tier I represents higher priority and Tier III represents lower priority for inspection purposes. The three Tiers are listed along the vertical axis of the matrix. See Matrix I, Risk-Based Targeting for Use Inspections (on p. B-4).

The five factors outlined above, associated with risk for **use-based inspections**, are listed horizontally across the top of the risk-based matrix as the headings for the columns. The definitions of each of these five factors and their use, as part of the R-B matrix, are outlined below. Each potential site for a use inspection would be placed in Tier I (high priority), Tier II, or Tier III (low priority), under each factor, based on the following definitions:

- (Column A) Product Toxicity: Based on the toxicity of the active ingredient (worker targeting) or the end-use product (handler targeting) used at the target site. If more than one product is used, for purposes of the matrix, base the classification on the product with the higher toxicity classification. Higher risk Tox I products are classified in Tier I, Tox II products in Tier II and Tox III and Tox IV products are classified in Tier III.

- (Column B) Crop Grown/Harvest Method: Designed to identify types of crops grown which are typically associated with intensive hand labor, thus potentially higher worker exposure. If harvesting is done completely by hand at the site, then Tier I is the classification. If a combination of harvesting by hand and machinery is used at the site, then Tier II is the classification. If harvesting was done completely with machinery at the site, then Tier III is the classification under column B.

- (Column C) Historical Compliance Problems With The Product's Active Ingredient: Based on the total number of incidents reported within the state for specific pesticide product(s) (used on a targeted site) during the past year. An "incident" is classified as a reported human illness or contamination of the environment based on use of the pesticide. If three or more incidents were reported to the state, the classification would be Tier I. Tier II is the classification for products with one or two reported incidents and Tier III is the classification for no incidents reported within the past year. A historical problem with a specific product which affected many workers at once could also be classified as Tier I.

- (Column D) Site Historical Compliance Problems: A combination of previous warning letters, criminal or civil administrative enforcement actions taken against a private party/individual registrant or dealer by Federal or State agencies for pesticide violations occurring within the last five years. The classification would be under Tier I, if three or more historical enforcement actions were taken against the party. Tier II is the classification if one or two actions were taken, while Tier III applies if no compliance history exists.

- (Column E) Farm Type/Number of Workers: Represents the type of farm targeted for inspection. Farm type will also help dictate the amount of worker exposure to pesticides at the farm.

For this reason, greenhouses should be classified as Tier I, nurseries as Tier II, and other farm types as Tier III. When similar farm types are targeted for inspection, the number of workers can be used as a tie-breaking factor, since a larger number of workers at the site indicates a potentially higher exposure rate.

Using the Risk-Based (R-B) Matrix for Use Inspections

In order to understand the risk based targeting method, let's assume you have 50 sites which could potentially be inspected, but you have resources and time to inspect only 20. To prioritize these sites, you should place each site on the R-B matrix using the threshold key on page B-7 as a guide. You have the option of:

- filling out a separate chart per site

OR

- using one chart for all the sites, by giving each site a designated letter or number, and placing that number or letter in the appropriate columns of the matrix using the threshold key

The remainder of this description assumes that a separate matrix will be completed per site. The following is a detailed step by step description for using each column of the matrix. See the threshold key for risk-based targeting for use inspections.

- Column A - If possible, identify the product used at the site. Depending on the toxicity category of the product, place a check mark in Tier I, II, or III under column A.

RISK-BASED TARGETING FOR USE INSPECTIONS

MATRIX I

NAME OF THE SITE(S) _____

_____

	TOXICITY OF PRODUCT USED ON SITE (A)	CROP GROWN/ HARVEST METHOD (B)	HISTORICAL PROBLEMS WITH PRODUCT'S ACTIVE INGREDIENTS (C)	HISTORICAL COMPLIANCE PROBLEMS WITH SITE (D)	FARM TYPE/ NUMBER OF WORKERS (E)	TOTAL CHECKS PER TIER AND THE ASSOCIATED PRIORITY (F)
TIER I						
TIER II						
TIER III						

For example, if the product used is classified under the Tox 1 category, place a check mark in Tier I for that site under column A. If more than one product is used at that site, for purposes of the matrix, consider the highest toxicity level of the products applied at the site.

- Column B - Identify the crops produced at the site. You can obtain this information by reviewing the geographical area, consulting with a state inspector with field experience, or contacting the county extension service or state grower and commodity organizations. The type of crop produced will determine whether hand labor or machines are used for harvesting. Fruit, flowers, and vegetables are associated with intensive hand labor, while grain crops are associated with machine labor. Place a check mark in the appropriate row under column B according to the level of the hand labor involved. The check mark would go in Tier I in cases where all hand labor is used, while Tier II is for a combination approach and Tier III is for all machine harvesting.

- Column C - Determine the number of incidents reported, during the past year, within the state for the product(s) being used at the potential inspection site. Place a check mark under column C in Tier I, II, or III according to the number of incidents reported for the product's active ingredient (used at the site). Under column C, classify three or more incidents in Tier I, and one to two incidents in Tier II. If no incidents, then check the column marked Tier III. If more than one product is used on site, consider the total number of incidents reported during the past year for all products used at the site.

- Column D - Check the state data base or files for any enforcement actions taken against the potential inspection site. The larger the number of previous compliance problems, the higher the inspection priority. Accordingly, a site with three or more past enforcement actions will have a check mark in Tier I, one to two actions will be placed in Tier II, and no violations fall under Tier III.

- Column E - Represents the type of farm and number of workers. All greenhouses and nursery farm types will generally have higher inspection priority over conventional

farms. Determine which category applies to your site, and place a check mark in column E in either Tier I, II, or III.

- Column F (Total Checks) - Count the number of check marks included in Tier I and place the total number of check marks for Tier I under Column F. Do the same for Tiers II and III. The threshold key on page B-7 provides the interpretation of priority levels per tier. This is repeated below in narrative form.

Tier I

Add the check marks across Tier I. If a total of two to five check marks appear in Tier I under column F, this indicates that the site is a high priority for inspection and this should be noted in column F (for Tier I).

If one check mark appears in Tier I, this indicates that the site is a medium priority.

If no check marks appear in Tier I, this indicates low priority.

Tier II

Add the check marks across Tier II. If a total of three to five checks marks appear in Tier II under column F, this indicates a high priority for inspection and this should be noted in column F (for Tier II).

If one to two check marks appear in Tier II, this indicates medium priority.

If no check marks appear, this indicates low priority.

Tier III

Add the check marks across Tier III. If a total of four to five check marks appear in Tier III, this indicates a low priority for inspection.

If two to three check marks appear in Tier III, this indicates medium priority.

Determining the Priority Level (Column F of R-B Matrix)

Looking at column F of the risk-based matrix, if a site is designated as a "high" priority within any Tier, the site should be placed in the category of high priority inspections.

The remaining sites would be in the medium or low priority categories. In these cases, again looking at column F of the matrix, if a site is designated as a "medium" priority within any Tier, the site should be placed in the category of medium priority inspections.

The remaining sites would be in the category of low priority inspections.

Prioritizing Within Categories of Inspections

Once inspection sites have been placed in three categories (high priority, medium priority, and low priority), there are criteria which can be used to prioritize inspection sites within each category.

Three criteria which can be used include:

- the type of inspection, whether applicators, handlers, or workers are the target audience.
- the number of workers (if known); the greater the average number of workers on site at the farm, the higher the priority for inspection
- the volume of pesticides used at the site

Also, when comparing the inspection sites placed within the high priority category, note the number of check marks that were included in Tier I versus Tier II versus Tier III on the risk-based matrix for each site. The greater the number of applicable factors/check marks in Tier I, the higher the priority for inspection. The rationale for this is based on the fact that the higher risk criteria were placed within Tier I.

Example of Targeting Use Inspection Sites based on Risk

To help readers understand the inspection targeting matrix, we have created the following three fictional sites, including certain types of crops, compliance problems and incidents involving the products:

- Very Green Acres - grows corn, uses Tox 3 chemical, three warning letters have been issued and two incidents with the product (See example chart #1-page B-10)

- Daniel Farm - grows cotton, two incidents with the product, Tox 2 chemical, no information on historical compliance problems (See example chart #2-page B-11)

- Mayo Green House - harvests flowers, uses Tox 1 chemical, no product incidents and no enforcement actions. (See example chart #3-page B-12)

The three steps on page B-13 outline the process for determining the priority level for inspection for each of these potential inspection sites.

RISK-BASED TARGETING FOR USE INSPECTIONS

MATRIX I

NAME OF THE SITE(S) VERY GREEN ACRES

	TOXICITY OF PRODUCT USED ON SITE **(A)**	**CROP GROWN/ HARVEST METHOD** **(B)**	**HISTORICAL PROBLEMS WITH PRODUCT'S ACTIVE INGREDIENTS** **(C)**	**HISTORICAL COMPLIANCE PROBLEMS WITH SITE** **(D)**	**FARM TYPE/ NUMBER OF WORKERS** **(E)**	**TOTAL CHECKS PER TIER AND THE ASSOCIATED PRIORITY** **(F)**
TIER I				X		1 = Medium
TIER II			X			1 = Medium
TIER III	X	X			X	3 = Medium

RISK-BASED TARGETING FOR USE INSPECTIONS

MATRIX I

NAME OF THE SITE(S) DANIEL FARM

	TOXICITY OF PRODUCT USED ON SITE **(A)**	**CROP GROWN/ HARVEST METHOD** **(B)**	**HISTORICAL PROBLEMS WITH PRODUCT'S ACTIVE INGREDIENTS** **(C)**	**HISTORICAL COMPLIANCE PROBLEMS WITH SITE** **(D)**	**FARM TYPE/ NUMBER OF WORKERS** **(E)**	**TOTAL CHECKS PER TIER AND THE ASSOCIATED PRIORITY** **(F)**
TIER I		X				1 = Medium
TIER II	X		X			2 = High
TIER III					X	1 = High

RISK-BASED TARGETING FOR USE INSPECTIONS

MATRIX I

NAME OF THE SITE(S) MAYO GREEN HOUSE

	TOXICITY OF PRODUCT USED ON SITE **(A)**	**CROP GROWN/ HARVEST METHOD** **(B)**	**HISTORICAL PROBLEMS WITH PRODUCT'S ACTIVE INGREDIENTS** **(C)**	**HISTORICAL COMPLIANCE PROBLEMS WITH SITE** **(D)**	**FARM TYPE/ NUMBER OF WORKERS** **(E)**	**TOTAL CHECKS PER TIER AND THE ASSOCIATED PRIORITY** **(F)**
TIER I	X	X			X	3 = High
TIER II						
TIER III			X	X		2 = Medium

Step I

According to the threshold key on page B-7, place check marks in each matrix. Use separate charts for each site, and use the threshold key for categorizing the information for Very Green Acres Farm. Very Green Acres is using a Tox 3 category chemical, so place a check mark under column A in Tier III. The site has been issued three enforcement actions in the past, so place another check mark under column D in Tier I. The product used has two incidents reported to the state within the past year, so place a check mark under column C in Tier II. The farm type is field, so place a check mark under column E in Tier III. Since Very Green Acres grows corn, it uses only machines to harvest the crop, so place a check mark under column B in Tier III. Complete the chart for Daniel Farm and Mayo Green House following the threshold key and using the same rationale. Please refer to the example matrices on the previous pages.

Step II

Total the number of check marks in Tier I, II, and III. Complete this step (for each potential inspection site) on each matrix.

Step III

Using the threshold key on page B-7, the three potential inspection sites were assigned the following priorities:

Mayo Green House = High Priority

Daniel Farm = High Priority

Very Green Acres = Medium Priority

Prioritizing Similar Categories/ Tie-Breaking Factors

If a state was to then prioritize the two high priority inspections, Mayo Green could be considered of higher priority (than Daniel Farm) given that more factors fell into Tier I (as shown on page B-12) for Mayo Green House. (More specifically, the chemical used at Mayo Green House is a toxicity category 1 product and the farm type and crop harvest method offers the greatest potential for exposure.)

These factors are placed in the matrix from left to right in columns in order of importance. These two factors represent the tie-breaking factor when the number of check marks in Tier I is identical for two sites. Other tie-breaking factors are the target audience (applicators,

handlers, or workers) and the number of workers. Volume of pesticides used at the site should also be a tie-breaking factor.

Using the Risk-Based Matrix for Producer Establishment Inspections (PEI)

A risk based targeting matrix was also developed for targeting producer establishments for inspections and appears on the next page. The threshold key for using this matrix is included on the following page.

The approach for using this PEI risk based matrix is the same as that previously described for use inspections. A new factor category, number of products produced at the establishment subject to the Worker Protection Standard, should also be considered when targeting these sites. (See WPS Active Ingredient List in Appendix E.)

The step-by-step process, previously described, for using the R-B matrix for use inspections would also apply to use of the PEI risk-based matrix.

Prioritizing Similar Categories/ Tie-Breaking Factors

Similar to Matrix I, Matrix II has been designed from left to right in order of importance.

The states are also encouraged to target PEIs based on the greatest potential for risk reduction whenever possible. The risk-based targeting matrix for PEIs suggests one recommended approach for doing so.

THRESHOLD KEY FOR

RISK-BASED TARGETING FOR USE INSPECTION

MATRIX I

	TOXICITY OF PRODUCT USED ON SITE (A)	**CROP GROWN/ HARVEST METHOD (B)**	**HISTORICAL PROBLEMS WITH PRODUCT'S ACTIVE INGREDIENTS (C)**	**HISTORICAL COMPLIANCE PROBLEMS WITH SITE (D)**	**FARM TYPE/ NUMBER OF WORKERS (E)**	**TOTAL CHECKS PER TIER AND THE ASSOCIATED PRIORITY (F)**
TIER I	TOX 1	HAND ONLY	3 OR MORE INCIDENTS WITHIN PAST YEAR	3 OR MORE ACTIONS	GREEN-HOUSE	2-5 CHECKS=H 1 CHECK=M 0 CHECK=L
TIER II	TOX 2	HAND AND MECHANICAL (MECH.)	1-2 INCIDENTS WITHIN PAST YEAR	1-2 ACTIONS	NURSERY	3-5 CHECKS=H 1-2 CHECKS=M 0 CHECK=L
TIER III	TOX 3 AND TOX 4	MECH. ONLY	NONE	NONE	FIELD, ETC.	4-5 CHECKS=L 2-3 CHECKS=M

KEY TO COLUMN F:
H = High Priority
M = Medium Priority
L = Low Priority

RISK-BASED TARGETING FOR PRODUCER ESTABLISHMENTS

MATRIX II

NAME OF THE ESTABLISHMENT(S): _____

_____

	HISTORICAL ESTABLISHMENT COMPLIANCE PROBLEMS (A)	HISTORICAL PRODUCT PROBLEMS (B)	TOXICITY CATEGORY OF PRODUCT PRODUCED (C)	NUMBER OF PRODUCTS PRODUCED SUBJECT TO WPS (D)	TOTAL CHECKS OR ENTRIES AND ASSOCIATED PRIORITY (E)
TIER I					
TIER II					
TIER III					

THRESHOLD KEY FOR

RISK-BASED TARGETING FOR PRODUCER ESTABLISHMENTS

MATRIX II

	HISTORICAL ESTABLISHMENT COMPLIANCE PROBLEMS (A)	HISTORICAL PRODUCT PROBLEMS (B)	TOXICITY CATEGORY OF PRODUCT PRODUCED ON SITE (C)	NUMBER OF PRODUCTS PRODUCED SUBJECT TO WPS (D)	TOTAL CHECKS OR NUMBERS/ PRIORITY (E)
TIER I	3 OR MORE ENFORCEMENT ACTIONS	3 OR MORE INCIDENTS WITHIN PAST YEAR	TOX 1	4 OR MORE	2-5 CHECKS=H 1 CHECK=M 0 CHECK=L
TIER II	1-2 ENFORCEMENT ACTIONS	1-2 INCIDENTS WITHIN PAST YEAR	TOX 2	3	3-5 CHECKS=H 1-2 CHECK=M 0 CHECK=L
TIER III	NONE	NONE	TOX 3 AND TOX 4	1-2	4-5 CHECKS=L 2-3 CHECKS=M

Key to the chart - Column E:
H = High priority
M = Medium Priority
L = Low priority