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Chapter NR 710

SITE DISCOVERY, SCREENING AND RANKING

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NR 710.01 Purpose. This chapter establishes procedures that the department shall use in evaluating sites and facilities in the environmental repair program, hazardous substance discharge program, leaking underground storage tank program and superfund program, to assist the department in determining the priority for action at those sites and facilities. This chapter is adopted pursuant to ss. 144.431 (1) (a) and (b), 144.442, 144.76 and 227.11 (2), Stats.

History: Cr. Register, April, 1994, No. 460, eff. 5−1−94.

NR 710.02 Applicability. This chapter applies to the department's discovery, screening and ranking of sites, facilities and portions of sites and facilities that are subject to regulation under the authority of s. 144.442 or 144.76, Stats.

Note: The department's superfund, spills, LUST and environmental repair programs may become aware of a potential site or facility through a wide variety of means, including any one of the following:

1. Notification of hazardous substance discharge, as required by ss. 144.76, Stats., and s. NR 158.05 or 705.05 for reporting discharges from underground storage tanks.
2. Citizen complaints.
3. Department investigations, observations or inspections.
4. Referrals from other programs or agencies.

History: Cr. Register, April, 1994, No. 460, eff. 5−1−94.

NR 710.03 Definitions. In this chapter:

(1) "CERCLIS" means the comprehensive environmental response, compensation and liability information system, as compiled by the U.S. EPA.

(2) "Hazard ranking system" means the method used by U.S. EPA to evaluate the relative potential of hazardous substance discharges to cause health or safety problems, or ecological or environmental damage.

(3) "Inventory" means the list of sites or facilities which may cause or threaten to cause contamination which the department is required to compile under s. 144.442 (4) (a), Stats.

(4) "LUST" means leaking underground storage tank.

(5) "Wisconsin remedial response site evaluation report" means the list of sites and facilities compiled and maintained [by the] department's emergency and remedial response program, including all of the following:

(a) The inventory of sites or facilities which may cause or threaten to cause contamination.

(b) The hazardous substance discharge incidents which require a response action beyond an immediate action.

(c) LUST sites which have been designated as high or medium priorities by the department.

Note: Currently, there are several site or facility lists compiled by the department, including the "inventory of sites which may cause or threaten to cause environmental pollution", the "hazard ranking list", the hazardous substance discharge incident list, the LUST list, a list of Wisconsin superfund sites on the NPL, the "registry of waste disposal sites in Wisconsin" and the "Wisconsin remedial response site evaluation report". To obtain any of these lists, please contact the Bureau of Solid and Hazardous Waste Management, Emergency and Remedial Response Section, Public Information Requests, P.O. Box 7921, Madison, WI 53707. The federal CERCLIS list is available from the U. S. EPA, by writing to: WI Freedom of Information Act Officer, U.S. EPA Region V, 77 W. Jackson Blvd, Chicago, IL 60604.

History: Cr. Register, April, 1994, No. 460, eff. 5−1−94.

NR 710.05 Identification of responsible parties. The department may attempt to identify potentially responsible parties during any phase of response action by any one of the following methods:

(1) Interviewing local officials, neighboring residents, persons involved with the operations of the site or facility, and past and present site or facility owners or operators.

(2) Reviewing operational records of the site or facility.

(3) Reviewing department records.

(4) Determining current and past ownership of the site or facility.

(5) Collecting and analyzing samples.

(6) Other appropriate means.

History: Cr. Register, April, 1994, No. 460, eff. 5−1−94.

NR 710.07 LUST site evaluation procedures. The department shall evaluate all confirmed hazardous substance discharges from leaking underground storage tanks to determine the relative threat each poses to public health, safety and welfare and the environment, and to determine the priority of the site or facility for action and department oversight. The department shall classify a LUST site as either a high, medium or low priority. The department may change, at any time, the priority of a site or facility on the basis of additional information provided by responsible parties or others.

History: Cr. Register, April, 1994, No. 460, eff. 5−1−94.

NR 710.09 Superfund site assessment. A site or facility may be evaluated by the department to determine eligibility for the federal superfund program, under CERCLA and the NCP. The department also may conduct federal site assessment activities, in cooperation with the U.S. EPA. Assessment activities may include, but are not limited to:

(1) Identifying sites for addition to CERCLIS;

(2) Reviewing files by department staff in the form of preliminary assessments;

(3) Collecting data both on−and−off−site by conducting field sampling;

(4) Preparing or reviewing federally prepared hazard ranking system scores, using the federal hazard ranking system; and

(5) Nominating sites or facilities to the national priorities list.

History: Cr. Register, April, 1994, No. 460, eff. 5−1−94.

NR 710.11 Environmental repair program screening. (1) INITIAL ASSESSMENT. The department shall conduct an initial assessment of each site or facility which the department suspects may threaten public health, welfare or safety or the environment. The department shall consider, at a minimum, all of the following information during the initial assessment:

(a) Type and form of contamination disposed of or present at the site or facility.

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(b) Estimated quantities of contamination disposed of or present at a site or facility.

(c) Toxicity and persistence of contamination disposed of or present at a site or facility.

(d) Size of the site or facility.

(e) Estimated depth to groundwater.

(f) Distance to private and public water supply wells.

(g) Population living within at least one−fourth mile of a facility or site.

(h) Types of surficial features and underlying soils.

(i) Distance from the site or facility to the nearest surface water and wetlands.

(j) Proximity to a floodplain or known flood hazard area.

(k) Proximity to sensitive environments, including fisheries and wildlife habitats, wetlands and other waters.

(L) Potential for direct contact with contamination.

(m) Estimated air emissions from the site or facility.

(2) DETERMINING SITE OR FACILITY POTENTIAL. The department shall use the information gathered pursuant to sub. (1) to determine whether the site or facility poses a high, low or unknown potential, based on the criteria in pars. (a) to (c).

(a) *High potential.* Based on the information gathered pursuant to sub. (1), the department shall assign the classification of high potential to any site or facility that threatens public health, safety or welfare or the environment after considering all of the following criteria:

1. Groundwater contamination at or beyond the applicable point of standards application attains or exceeds a preventive action limit for any substance of public health concern or public welfare concern listed in ss. NR 140.10 and 140.12. If there is no groundwater quality standard established for a substance in ch. NR 140, the detection of a non−naturally occurring substance above the limit of detection and the detection of naturally occurring substances above background levels, that have not been affected by any contamination.

2. Surface water or sediment contamination attributable to the site or facility that violates the standards established pursuant to chs. NR 102 to 106.

3. Air contaminants in violation of the air quality standards contained in chs. NR 400 to 499.

4. Site or facility−specific factors identified in sub. (1) lead the department to conclude that there is a high potential that the site or facility may threaten public health, safety or welfare or the environment.

(b) *Low potential.* The classification of low potential may be assigned to any site or facility not classified as high potential after considering all of the following criteria:

1. Materials at the site or facility consist solely of concrete, brick, wood, inert material or other demolition debris which does not contain hazardous substances or environmental pollution.

2. No further action is required at the site or facility to comply with chs. NR 700 to 736, after considering all of the following:

a. Volume of contamination.

b. Physical properties of the contamination, such as the toxicity and persistence.

c. Soil components.

d. Geology and hydrogeology, including depth to bedrock and groundwater.

e. Potential for direct contact.

f. Other factors.

3. Other appropriate information which leads the department to conclude that there is a low potential for the site or facility to threaten public health, safety or welfare or the environment.

(c) *Unknown potential.* Any site or facility which cannot be classified as having a high or low potential to threaten public health, safety or welfare or the environment shall be classified as having unknown potential.

(3) ADDITIONAL INFORMATION. The department shall collect additional information for each site or facility classified as a high potential or unknown potential, including:

(a) Name of the person who presently owns or operates the site or facility.

(b) Site or facility history, including present operational status, the approximate length of time the site or facility was operated, and the names of potentially responsible persons.

(c) Physical characteristics of the site including, but not limited to, surface and subsurface soil permeability, depth to bedrock, depth to groundwater and type of bedrock.

(d) The number and location of private water supply wells and public water supply systems within 4 miles of the site or facility and the population served by those water supply well systems.

(e) The ability of the contamination to migrate to or impact the environment, including proximity to fisheries, wildlife habitat, wetlands or other areas where there may be a detrimental effect on the environment.

(f) Other information which may assist the department in determining the extent of actual or potential threat posed by the site or facility.

(4) SITE PRIORITIZATION. The department may develop and implement a prioritization system for each program to quickly estimate the environmental impact of a site or facility and to establish a general priority for department action.

History: Cr. Register, April, 1994, No. 460, eff. 5−1−94.

NR 710.13 Wisconsin remedial response site evaluation report. (1) GENERAL. The department shall routinely publish and update a report listing sites or facilities in Wisconsin which have been determined to represent a high potential of threatening public health, safety or welfare or the environment. This publication shall be titled the Wisconsin remedial response site evaluation report, and shall include all of the following:

(a) The inventory of sites or facilities which may cause or threaten to cause environmental pollution, which the department is required to compile and maintain under s. 144.442, Stats.

(b) Sites or facilities where a hazardous substance discharge has occurred and a response action, beyond an immediate action, is necessary.

(c) Sites where a hazardous substance discharge has occurred from an underground storage tank and the department has classified it as a high or medium priority, under s. NR 710.07.

(2) SITES OR FACILITIES ON THE INVENTORY. (a) *Listing.* A site or facility which is being addressed by the department under s. 144.442, Stats., shall be listed on the inventory specified in s. NR 710.13 (1) (a), after the department has classified the site or facility as having a high potential for threatening public health, safety or welfare or the environment, including all sites or facilities proposed or listed as final on the national priorities list, using the screening process in s. NR 710.11 (2).

(b) *Contents.* The inventory shall contain all of the following information:

1. Site or facility name.

2. District, county, town or city, quarter−quarter section and address or legal description of where the site or facility is located.

(c) *Publication.* The department shall publish the inventory and any amendments to the inventory as required by s. 144.442 (4), Stats. Amendments to the inventory shall be published no later than December 31 of every even−numbered year after May 1, 1994.

(d) *Exceptions.* 1. Except as provided in subd. 2., the department may not list on the inventory sites or facilities which are regulated under a department permit or approval issued under ss.

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144.04, 144.30 to 144.79, chs. 30, 147 and 162, Stats., or other approvals or permits issued by the department.

2. If the regulation of a site or facility under department approval or permit is failing to correct any threats to public health, safety or welfare or the environment, the department may consider the site or facility for listing on the inventory. The department may list sites or facilities regulated under the authorities listed in subd. 1. on the inventory if the department determines that the site or facility owner or operator, or both, are not responsible for the contamination, or there is no responsible party able or willing to undertake the necessary response actions at the site or facility.

(e) *Delisting.* 1. Any site or facility may be removed from the inventory if the department determines that the site or facility no longer presents a substantial danger to public health, safety and welfare and the environment, or if the department determines that it shall address the site or facility under s. 144.76, Stats., instead of s. 144.442, Stats.

2. The department shall delist an individual site or facility from the inventory by excluding the site or facility from the next inventory amendment published after the department's decision.

3. The department shall use the screening process in s. NR 710.11 (2) to decide if a site or facility no longer presents a substantial danger to public health, welfare and safety and the environment.

4. A site or facility may be delisted after the department has approved the request for case closure of the entire site or facility in accordance with ch. NR 726.

(3) HAZARDOUS SUBSTANCE DISCHARGES. (a) *Listing.* A site or facility subject to regulation under s. 144.76, Stats., shall be listed on the Wisconsin remedial response site evaluation report when the department determines that the site or facility threatens public health, welfare or safety or the environment, if the screening process described in s. NR 710.11 (2) identifies the site or facility as having a high potential for threatening public health, welfare or safety or the environment or when a site investigation is necessary, as required by s. NR 158.05 or 708.09.

(b) *Contents.* The hazardous substance discharge sites or facilities meeting the criteria in par. (a) shall be listed in the Wisconsin [remedial response] site evaluation report. This section of the report shall contain all of the following information about each site or facility:

1. Site or facility name.

2. District, county, town or city, quarter−quarter section and address or legal description where the site or facility is located.

(c) *Exceptions.* A site or facility which is being addressed under s. 144.76, Stats., but is designated as a LUST site shall be listed in the LUST section of the report, not in the hazardous substance discharge section of the Wisconsin remedial response site evaluation report.

(d) *Delisting.* 1. Any site or facility may be removed from the report if the department determines that the site or facility is in compliance with all applicable environmental and public health standards and that the environment has been restored to the extent practicable, or if the department determines that it will address the site or facility under s. 144.442, Stats., instead of s. 144.76, Stats.

2. The department shall delist an individual site or facility by excluding the site or facility from the next Wisconsin remedial response site evaluation report published after the department's decision.

3. When no response action is required at the site or facility, the department shall use the screening process contained in s. NR 710.11 (2) or the no further action criteria in s. NR 158.09 to decide whether or not to delist the site or facility in compliance with this paragraph.

4. At the completion of an immediate action, a site or facility may be delisted after no further action is required by the department pursuant to s. NR 708.09.

5. A site or facility may be delisted after the department has approved the request for case closure under ch. NR 726.

(4) LUST SITES. (a) *Listing.* A site or facility that is subject to regulation under s. 144.76, Stats., may be listed in the LUST section of the Wisconsin remedial response site evaluation report if it involves a discharge of a hazardous substance from a leaking underground storage tank and the department has determined that the site or facility threatens public health, welfare or safety or the environment, using the screening process described in s. NR 710.07. Only sites or facilities identified as high and medium priority shall be listed in the Wisconsin remedial response site evaluation report. The LUST section of the report shall contain all of the following information:

1. Site or facility name.

2. District, county, town or city, and address or legal description where the site or facility is located.

(b) *Delisting.* 1. Any site or facility may be removed from the LUST section of the report if the department determines that the site or facility is in compliance with all applicable public health and environmental standards, and that the environment has been restored to the extent practicable.

2. The department shall delist an individual site or facility by excluding the site or facility from the next Wisconsin remedial response site evaluation report published subsequent to the department's decision and the LUST program list.

3. When no response action is required [at] the site or facility, the department shall use the screening process contained in s. NR 710.07 or the no further action criteria in s. NR 158.09 to decide whether or not to delist the site or facility in compliance with this paragraph.

4. At the completion of an immediate action, a site or facility may be delisted after no further action is required by the department pursuant to s. NR 708.09.

5. A site or facility may be delisted after the department has approved the request for case closure under ch. NR 726.

History: Cr. Register, April, 1994, No. 460, eff. 5−1−94.

NR 710.15 Environmental repair program hazard ranking system. (1) APPLICABILITY. (a) *Sites or facilities to be scored.* All sites or facilities listed on the inventory under s. NR 710.13 (2) shall be scored using the environmental repair program hazard ranking procedures in this section.

Note: The hazard ranking system does not quantify the probability of harm from a site or facility or the magnitude of the harm that could result, although the factors have been selected in order to approximate both those elements of risk. It is a procedure for ranking facilities in terms of the potential threat they pose by describing the manner in which the substances of concern are contained, the route by which they would be discharged, and the likely impacts on the public health, safety or welfare or the environment. The hazard ranking system, as currently drafted, incorporates the ranking system formerly found in ch. NR 550, without revision. It is the intent of the department to revise the hazard ranking system in the near future, after reviewing alternative scoring systems including other state systems, as well as the new federal hazard ranking system.

(b) *Rescoring.* The department shall evaluate the information obtained from the site investigation conducted in compliance with ch. NR 716 and if appropriate, the site or facility using the environmental repair program hazard ranking procedures in this section.

(c) *Substantial danger.* 1. All sites or facilities that receive a migration route score equal to, or greater than, 15.0 using the scoring procedures listed in ss. NR 710.17 to 710.27 shall be considered by the department to pose a substantial threat to the public health, welfare or safety or the environment.

2. The department may, on a case−by−case basis, determine that a site or facility that has not been scored or that receives a migration route score of less than 15.0 poses a substantial threat

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to the public health, welfare or safety or the environment, based on relevant information which was not considered in the hazard ranking system. In this case, the department shall maintain a written record of the decision, including a detailed explanation of the factors considered to determine that a substantial threat exists.

(2) HAZARD RANKING LIST. (a) *Ranking list.* The department shall publish a hazard ranking list of sites or facilities scored using the scoring procedures in this section.

(b) *Publication.* 1. The department shall publish the hazard ranking list, and any amendments, as required by s. 144.442 (4), Stats.

2. Amendments to the hazard ranking list shall be published no later than December 31 of every odd−numbered year, after the initial hazard ranking list is published.

(c) *List information.* For each site or facility scored, the hazard ranking list shall contain all of the following information:

1. Site or facility name.

2. District where site or facility is located.

3. Migration route score, the fire and explosion score, and the direct contact score.

4. Notice that the site or facility poses a substantial threat to public health, welfare, safety or the environment.

5. Brief description of the reason why the substantial threat exists.

6. Statement describing response actions taken at the site or facility, if any and whether the response actions have been completed.

(d) *Other substantial danger sites or facilities.* The hazard ranking list shall also include those sites or facilities that have been determined by the department to pose a substantial threat to the public health, welfare or safety or the environment, under sub. (1) (c) 2.

(3) SCORING. (a) *General.* The hazard ranking system assigns 3 hazard mode or route scores to a site or facility. These hazard mode or route scores are the migration score, the fire and explosion score, and the direct contact score.

(b) *Migration score.* The migration score, SM, reflects the potential for harm to humans or the environment from migration of substances away from the site or facility by routes involving groundwater, surface water, or air. It is a composite of separate scores for each of the 3 routes. The migration score is computed by the following equation:

$$S_M = \frac{1}{1.73} \quad (S^2_{gw} + S^2_{sw} + S^2_a)0.5$$

where: S_{gw} = groundwater route score

S_{sw} = surface water route score

S_a= air route score

Note: The effect of combining the route scores is to emphasize the highest scoring route while giving some additional consideration to the other routes. The factor 1/1.73 is used to reduce S_M scores to a 100−point scale.

(c) *Fire and explosion.* The fire and explosion score, SFE, reflects the potential for harm from contamination that can explode or cause fires.

(d) *Direct contact.* The direct contact score, SDC, reflects the potential for harm from direct contact with contamination at the site or facility.

Note: The hazard ranking system does not quantify the probability of harm from a site or facility or the magnitude of the harm that could result, although the factors have been selected in order to approximate both those elements of risk. It is a procedure for ranking facilities in terms of the potential threat they pose by describing the manner in which the substances of concern are contained, the route by which they would be released, and the likely impacts on humans or natural resources.

(4) RATING FACTORS. The score for each hazard mode (migration, fire and explosion and direct contact) or route is obtained by considering a set of factors that characterize the potential for the site or facility to cause harm (Table 1). Each factor is assigned a numerical value according to the procedures set forth in ss. NR 710.17 to 710.27. This value is then multiplied by a weighing factor yielding the factor score. The factor scores within each category are added, and the total scores for each factor category are multiplied together to develop a score for groundwater, surface water, air, fire and explosion, and direct contact. In computing the fire and explosion, direct contact, or individual migration route score, the product of its factor category scores is divided by the maximum possible score and multiplied by 100 to reduce scores to a 100−point scale.

(5) RANKING. (a) *Repair action.* The migration route score shall be used to determine substantial danger under sub. (1), and for establishing repair priorities for projects being addressed by the department under s. 144.442, Stats.

(b) *Emergency action.* Fire and explosion and direct contact scores shall be used by the department to help identify sites or facilities requiring an emergency immediate action under ch. NR 708.

(6) INFORMATION. Use of the hazard ranking system requires considerable information about the site or facility, its surroundings, the contamination present, and the geological character of the area. Where there are no data for a factor, it shall be assigned a value of zero. However, if a factor with no data is the only factor in a category (for example: containment), then the factor is given a score of 1. If data are lacking for more than one factor in connection with the evaluation of either any migration or exposure route that route score is set at zero. Figure 1 illustrates the format for recording general information regarding the site or facility being evaluated. It shall also serve as a cover sheet for the work sheets used in the evaluation.

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Table 1
Comprehensive List of Rating Factors

HAZARD MODE	FACTOR CATEGORY	Factors: GROUNDWATER ROUTE	Factors: SURFACE WATER ROUTE	Factors: AIR ROUTE
Migration	Route Characteristics	* Depth to Groundwater * Infiltration Potential * Permeability of Unsaturated Zone * Physical State of Waste	* Facility Slope and Intervening Terrain * Run−off Potential * Distance to Nearest Surface Water * Physical State of Waste	
	Containment	* Containment	* Containment	
	Waste Characteristics	* Toxicity/Persistence * Leachate Strength * Hazardous Waste Quantity/ Total Waste Quantity	*Toxicity/Persistence * Leachate Strength *Hazardous Waste Quantity/ Total Waste Quantity	* Reactivity/ Incompatibility * Toxicity * Hazardous Waste Quantity/Total Waste Quantity
	Potential Impacts	* Groundwater Use * Distance to Nearest Well/ Population Served	* Surface Water Use * Distance toSensitive Environment * Population Served/Distance to Water Intake Downstream	* Land Use * Population Within 4−Mile Radius * Distance to Sensitive Environment
Fire and Explosion	Containment	* Containment		
	Waste Characteristics	* Direct Evidence * Ignitability * Reactivity * Incompatibility * Hazardous Waste Quantity/ Total Waste Quantity		
	Potential Impacts	* Distance to Nearest Population * Distance to Nearest Building * Distance to Nearest Sensitive Environment * Land Use * Population Within 2−Mile Radius * Number of Buildings Within a 2−Mile Radius		
Direct Contact	Observed Incident	* Observed Incident		
	Accessibility	* Accessibility of Hazardous Substances		
	Containment	* Containment		
	Waste Characteristics	* Toxicity		
	Potential Impacts	* Population Within 1−Mile Radius * Distance to Critical Habitat		

History: Cr. Register, April, 1994, No. 460, eff. 5−1−94.

NR 710.17 Groundwater migration route. (1) OBSERVED RELEASE. (a) *Scoring.* If a release is observed using the criteria listed in par. (b), enter a score of 45 on line one of the groundwater route worksheet (Figure 2), and do not evaluate the route characteristics and containment factors (lines 2 and 3). If direct evidence of a discharge or release is lacking, enter a value of zero on line one and proceed with scoring the route characteristics and containment factors as described in subs. (2) and (3).

(b) *Direct evidence.* Direct evidence of release must be analytical. If a contaminant is measured, regardless of frequency, in groundwater or a well in the vicinity of the site or facility at a higher level than the background level, then quantitative evidence exists, and a release or discharge has been observed. For the purpose of this paragraph, one of the following methods may be used to evaluate an observed release:

1. In the vicinity of the site or facility, the concentration of a substance of public health or welfare concern attains or exceeds the preventive action limits contained in Table 1, s. NR 140.10, or Table 2, s. NR 140.12;

2. In the vicinity of the site or facility, the concentration of an indicator parameter exceeds a preventive action limit for that parameter as established in s. NR 140.20;

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Figure 1
HRS COVER SHEET

Site or facility name:_____

Location:_____

DNR district:_____

Person(s) in charge of the site or facility:_____

Name of reviewer:_____

Date:_____

General description of the site or facility:

(For example: landfill, surface impoundment, waste pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action, etc.)

Scores: $S_M = (S_{gw} = S_{sw} = S_a =)$

$S_{FE} =$

$S_{DC} =$

Figure 2
GROUNDWATER ROUTE WORKSHEET

Rating Factor	Assigned Value (circle one)	Multiplier	Score	Max. Score	Ref. Section
[1] Observed Release	0 45	1		45	sub.(1)
If observed release is given a score of 45, proceed to line [4]. If observed release is given a score of 0, proceed to line [2].					
[2] Route Characteristics					sub.(2)
Depth to Groundwater	0 1 2 3	2		6	
Infiltration Potential	0 1 2 3	1		3	
Permeability of the Unsaturated Zone	0 1 2 3	1		3	
Physical State	0 1 2 3	1		3	
	Total Route Characteristics Score			15	
[3] Containment	0 1 2 3	1		3	sub.(3)
[4] Waste Characteristics					sub.(4)
Toxicity/Persistence	0 3 6 9 12 15 18	1		18	
Leachate Strength	0 2 4 6 8 10	1		10	
Waste Quantity/Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8	
	Total Waste Characteristics Score			26	
[5] Potential Impacts					sub.(5)
Groundwater Use	0 1 2 3	3		9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 35 40	1		40	
	Total Potential Impacts			49	
[6] If line [1] is 45, multiply [1] x [4] x [5] If line [1] is 0, multiply [2] x [3] x [4] x [5]				57,330	
[7] Divide line [6] by 57,330 and multiply by 100			$S_{gw} =$		

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3. In the vicinity of the site or facility, a sample contains a detectable concentration of a substance not detected in a background sample; or

4. The department determines by using other appropriate information that the increase in the concentration of a substance in the vicinity of the site or facility is from the site or facility.

Note: Tables 12 and 15 contained in sub. (4) and Tables One, 2 and 3 contained in ch. NR 140, list substances which may be used for determining an observed release.

(c) *Qualitative evidence.* Qualitative evidence of release, e.g., an oily or otherwise objectionable taste or smell in well water, constitutes direct evidence only if it can be confirmed that it results from a release at the site or facility in question.

(2) ROUTE CHARACTERISTICS. (a) *Depth to groundwater.* Depth to groundwater is measured vertically from the lowest point of the substances of concern to the highest seasonal groundwater level. This factor is one indicator of the ease with which a pollutant from the facility could migrate to groundwater. Values for depth to groundwater are shown in Table 2.

Table 2
DEPTH TO GROUNDWATER

Depth to Groundwater	Assigned Value
>150 feet	0
76 to 150 feet	1
21 to 75 feet	2

(b) *Infiltration potential.* Infiltration potential is a measure of the site characteristics which encourage, or allow, the accumulation of water on the site surface and movement of water through the wastes or hazardous substances generating leachate. Infiltration potential is a function of the available water at the site, the slope of the site surface, the type of surface soils, and the vegetative cover. Infiltration potential is assigned a value from Table 3. The infiltration score is determined by adding the individual values obtained from Tables 4 and 5, and Figure 3.

Table 3
INFILTRATION POTENTIAL

Infiltration Potential	Infiltration Score	Assigned Value
Low	(0−6)	0
Moderately Low	(7−11)	1
Moderately High	(12−17)	2
High	(18−22)	3

Table 4
SLOPE/VEGETATIVE COVER

Vegetative Cover	Site Surface Slope			
	<3%	3−5%	5−8%	>8%
None	9	7	6	5
Poorly Established< (Sparse, Root Zone 6″	8	6	5	4
Established (Good, Root Zone 6−12″)	6	4	3	2
Well Established> (Lush, Root Zone 12″)	4	2	1	0

Table 5

Soil Score	Infiltration
Surface Soil Type	Value
Sand	8
Silty Sand	7
Sandy Loam	6
Silty Loam	5
Peaty Topsoil	4
Clay Loam	3
Silty Clay	2
Clay	1

Table 6
PERMEABILITY OF UNDERLAYING GEOLOGICAL MATERIALS

TYPE OF MATERIAL	APPROXIMATE RANGE OF HYDRAULIC CONDUCTIVITY	ASSIGNED VALUE
Unfractured clay, cemented till, shale; unfractured metamorphic and igneous rocks	10^{-7} cm/sec	0
Silt, loess, silty clays, silty loams, clay loams; less permeable limestone, dolomites, and sandstone; moderately permeable till; fractured clay	$10^{-5} - 10^{-7}$ cm/sec	1
Fine sand and silty sand; sandy loams; moderately permeable limestone, dolomites, and sandstone (no karst); moderately fractured igneous and metamorphic rocks, some coarse till	$10^{-3} - 10^{-5}$ cm/sec	2
Gravel, sand; highly fractured igneous and metamorphic rocks; permeable basalt and lavas, karst limestone and dolomite	10^{-3} cm/sec	3

(c) *Subsurface permeability.* Permeability of unsaturated zone (or intervening geological formations) is an indicator of the speed at which a contaminant could migrate from a site or facility. Values for permeability are shown in Table 6.

(d) *Physical state of waste.* Physical state refers to the state of the substances of concern at the time of disposal, except that gases generated by the substances in a disposal area should be considered in rating this factor. Values for the physical state of the substance are shown in Table 7.

Table 7
PHYSICAL STATE

Physical State	Assigned Value
Solid, consolidated or stabilized	0
Solid, unconsolidated or unstabilized	1
Powder or fine material	2
Liquid sludge or gas	3

Figure 3 − Water Balance Values

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(3) CONTAINMENT. Containment is a measure of the natural or artificial means that have been used to minimize or prevent a substance from entering groundwater. Examples include liners, leachate collection systems, and sealed containers. Containment values are shown in Table 8. Consideration shall be given to all ways in which substances are stored or disposed at the site or facility. If the site or facility involves more than one method of storage or disposal, assign the highest from among all applicable values, e.g., if a landfill has a containment value of one, and, at the same location, a surface impoundment has a value of 2, assign containment a value of 2.

Table 8
CONTAINMENT VALUE FOR GROUNDWATER ROUTE

Assign containment a value of 0 if: (1) all the hazardous substances at the site or facility are underlain by an essentially nonpermeable surface (natural or artificial) and adequate leachate collection systems and diversion systems are present; or (2) there is no groundwater in the vicinity. The value "0" does not indicate no risk. Rather, it indicates a significantly lower relative risk when compared with more serious sites. Otherwise, evaluate the containment for each of the different means of storage or disposal at the site or facility using the following guidance.	
A .Surface Impoundment	Assigned Value
Sound run−on diversion structure, essentially nonpermeable liner (naturalor artificial) compatible with the waste, and adequate leachate collection system.	0
Essentially nonpermeable compatible liner with no leachate collection system; or inadequate freeboard.	1
Potentially unsound run−on diversion structure; or moderately permeable compatible liner.	2
Unsound run−on diversion structure; no liner; or incompatible liner.	3
B.Containers	Assigned Value
Containers sealed and in sound condition, adequate liner, and adequate leachate collection system.	0
Containers sealed and in sound condition, no liner or moderately permeable liner.	1
Containers leaking, moderately permeable liner.	2
Containers leaking and no liner or incompatible liner.	3
C .Piles	Assigned Value
Piles uncovered and waste stabilized; or piles covered, waste unstabilized, and essentially nonpermeable liner.	0
Piles uncovered, waste unstabilized, moderately permeable liner, and leachate collection system.	1
Piles uncovered, waste unstabilized, moderately permeable liner, and leachate collection system.	2
Piles uncovered, waste unstabilized, and no liner.	3
D. Landfill	Assigned Value
Essentially nonpermeable liner, liner compatible with waste, and adequate leachate collection system.	0
Essentially nonpermeable compatible liner, no leachate collection system, and landfill surface precludes ponding.	1
Moderately permeable, compatible liner, and landfill surface precludes ponding.	2
No liner or incompatible liner; moderately permeable compatible liner; landfill surface encourages ponding; no run−on control.	3

(4) WASTE CHARACTERISTICS. (a) *Scoring.* The waste characteristics score is evaluated using the most hazardous substances, or the strength of collected leachate, at the site or facility that may migrate to groundwater. Take the substance with the highest score as representative of the potential hazard due to waste characteristics. Note that the substance that may have been observed in the release category can differ from the substance used in rating waste characteristics.

(b) *Toxicity and persistence.* Toxicity and persistence have been combined into a matrix because of their important relationship. Determine the matrix toxicity/persistence value for a substance using Table 12, or evaluate each factor individually as discussed in pars. (c) and (d). Match the individual values assigned from Tables 10 and 11 with the values in Table 9 for the combined rating factor. Evaluate several of the most hazardous substances at the facility independently and enter only the highest score from Table 9 or 12 on the worksheet.

Table 9
TOXICITY AND PERSISTENCE

	Value for Persistence			
Value for Toxicity	0	1	2	3
0	0	0	0	0
1	3	6	9	12
2	6	9	12	15
3	9	12	15	18

(c) *Toxicity.* The toxicity of each substance being evaluated is given a value using the rating schemes shown in Table 10. Specific information about chemical toxicity is given in Table 13 or 14.

Table 10
TOXICITY

Toxicity Level from Table 13 or Table 14	Assigned Value
Level 0	0
Level 1	1
Level 2	2
Level 3 or 4	3

(d) *Persistence.* Persistence of each substance is evaluated based on its biodegradability. Persistence values are shown in Table 11. Specific information about chemical persistence is given in Table 15.

Table 11
PERSISTENCE

Persistence of Substance	Assigned Value
Easily biodegradable compounds	0
Straight chain hydrocarbons	1
Substituted and other ring compounds	2
Metals, polycyclic compounds and halogenated hydrocarbons	3

(e) *Leachate strength.* Leachate strength may be used to estimate the potential environmental pollution caused by the site or facility. Values for leachate strength are based on chemical oxygen demand, COD, and are given in Table 16. Only one of the 2 estimates, toxicity/persistence or leachate strength, is to be used.

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Table 12
Toxicity/Persistence

Chemical/Compound	Groundwater & Surface water	Air	Ignitability	Reactivity	Volatility
Acenapthene	9	3			
Acetaldehyde	6	6	3	2	3
Acetic Acid	6	6	2	1	1
Acetone	6	6	3	0	3
2−Acetylaminofluorene	18	9			
Aldrin	18	9	1	0	0
Ammonia	9	9	1	0	3
Aniline	12	9	2	0	1
Anthracene	15	9			
Arsenic	18	9			
Arsenic Acid	18	9			
Arsenic Trioxide	18	9			
Asbestos	15	9			
Barium	18	9			
Benzene	12	9	3	0	3
Benzidine	18	9			
Benzo(a)pyrene	18	9			
Benzopyrene, NOS	18	9			
Beryllium & Compounds, NOS	18	9			
Beryllium Dust, NOS	18	9			
Bis (2−Chloroethyl) Ether	15	9			
Bis (2−Ethylhexyl) Phthalate	12	3			
Bromodichloromethane	15	6			
Bromoform	15	6			
Bromomethane	15	9			
Cadmium	18	9	0		
Carbon Tetrachloride	18	9	0	0	3
Chlordane	18	9			
Chlorobenzene	12	6	3	0	1
Chloroform	18	6	0	0	3
3−Chlorophenol	12	6			
4−Chlorophenol	15	9			
2−Chlorophenol	12	6			
Chromium	18	9			
Chromium, Hexavalent (Cr^{+6})	18	9			
Chromium, Trivalent (Cr^{+3})	15	6			
Copper & Compounds, NOS	18	9			
Creosote	15	6			
Cresols	9	6	2	0	1

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Table 12
Toxicity/Persistence

Chemical/Compound	Groundwater & Surface water	Air	Ignitability	Reactivity	Volatility
4−Cresol	12	9	1	0	1
Cupric chloride	18	9			
Cyanides (soluble salts), NOS	12	9			
Cyclohexane	12	6	3	0	3
DDE	18	9			
DDT	18	9			
Diaminotoluene	18	6			
Dibromochloromethane	15	6			
1,2−Dibromo, 3−chloropropane	18	9			
Di−N−Butyl−Phthalate	18	6			
1,4−Dichlorobenzene	15	6			
Dichlorobenzene, NOS	18	6			
1,1−Dichloroethane	12	6			
1,2−Dichloroethane	12	9			
1,1−Dichloroethene	15	9			
1,2−cis−Dichloroethylene	12	3			
1,2−trans−Dichloroethylene	12	3			
Dichloroethylene, NOS	12	3			
2,4−Dichlorophenol	18	6			
2,4−Dichlorophenoxyacetic Acid	18	9			
Dicyclopentadiene	18	9			
Dieldrin	18	9			
2,4−Dinitrotoluene	15	9			
Dioxin	18	9			
Endosulfan	18	9			
Endrin	18	9	1	0	0
Ethylbenzene	9	6	1	0	0
Ethylene Dibromide	18	9			
Ethylene Glycol	9	6			
Ethyl Ether	15	6			
Ethylmethacrylate	12	6			
Fluorine	18	9			
Formaldehyde	9	9	2	0	3
Fromic Acid	9	6	2	0	2
Heptachlor	18	9			
Hexachlorobenzene	15	6			
Hexachlorobutadiene	18	9			
Hexachlorocyclohexane, NOS	18	9			
Hexachlorocyclopentadiene	18	9			
Hydrochloric Acid	9	6			

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Table 12
Toxicity/Persistence

Chemical/Compound	Groundwater & Surface water	Air	Ignitability	Reactivity	Volatility
Hydrogen Sulfide	18	9			
Indene	12	6			
Iron & Compounds, NOS	18	9			
Isophorone	12	6			
Isopropyl Ether	9	3	0	0	3
Kelthane	15	6			
Kepone	18	9			
Lead	18	9			
Lindane	18	9	1	0	0
Magnesium & Compounds, NOS	15	6			
Manganese & Compounds, NOS	18	9			
Mercury	18	9			
Mercury Chloride	18	9			
Methane	6		3	0	3
Methoxychlor	15	6			
4,4−Methylene−Bis−(2−Chloroaniline)	18	9			
Methylene Chloride	12	6			
Methyl Ethyl Ketone	6	6	3	0	2
Methyl Isobutyl Ketone	12	6			
4−Methyl−2−Nitroaniline	12	9			
Methyl Parathion	9	9	3	2	2
2−Methylpyridine	12	6			
Mirex	18	9			
Naphthalene	9	6	2	0	1
Nickel & Compounds, NOS	18	9			
Nitric Acid	9	9	0	0	3
Nitroaniline, NOS	18	9			
Nitrogen Compounds, NOS	12	0			
Nitroquanidine	12	9			
Nitrophenol, NOS	15	9			
m−Nitrophenol	15				
o−Nitrophenol	12				
p−Nitrophenol	15				
Nitrosodiphenylamine	12	6			
Parathion	9	9	1	2	0
Pentachlorophenol	18	9			
Pesticides, NOS	18	9			
Petroleum, Kerosene	12	0	2	0	1
Phenanthrene	15	9			

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Table 12
Toxicity/Persistence

Chemical/Compound	Groundwater & Surface water	Air	Ignitability	Reactivity	Volatility
Phenol	12	9	2	0	1
Phosgene	9	9			
Polybrominated Biphenyl (PBB), NOS	18	9			
Polychlorinated Biphenyls (PCB), NOS	18	9			
Potassium Chromate	18	9			
Radium & Compounds, NOS	18	9			
Radon & Compounds, NOS	15	9			
RDX, (Cyclonite)	15	0			
2,4−D, Salts & Esters	18	9			
Selenium	15	9			
Sevin (Carbaryl)	18	9			
Sodium Cyanide	12	9			
Styrene	9	6			
Sulfate	9	0			
Sulfuric Acid	9	9	0	2	1
2,4,5−T	18	9			
1,1,2,2−Tetrachloroethane	18	9			
Tetrachloroethane, NOS	18	9			
1,1,2,2−Tetrachloroethene (Tetrachloroethylene)	12	6			
Tetraethyl Lead	18	9			
Tetrahydrofuran	15	6			
Thorium & Compounds, NOS	18	9			
Toluene	9	6	3	0	2
TNT	12				
Toxaphene	18	9			
Tribromomethane	18	9			
1,2,4−Trichlorobenzene	15	6	1	0	1
1,3,5−Trichlorobenzene	15	6	1	0	1
1,1,1−Trichloroethane	12	6			
1,1,2−Trichloroethane	15	6			
Trichloroethane, NOS	15	6	1	0	3
Trichloroethene	12	6			
1,1,1−Trichloropropane	12	6			
1,1,2−Trichloropropane	12	6			
1,2,3−Trichloropropane	15	9			
Uranium & Compounds, NOS	18	9			
Varsol	12	6			
Vinyl Chloride	15	9			

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Table 12
Toxicity/Persistence

Chemical/Compound	Groundwater & Surface water	Air	Ignitability	Reactivity	Volatility
Xylene	9	6	3	0	1
Zinc & Compounds, NOS	18	9			
Zinc Cyanide	18	9			

Note: The source of this table is 40 CFR part 300, Appendix A and guidance from EPA using information from:
−Sax, N.I.; *Dangerous Properties of Industrial Materials, 4th Edition*, 1975.
−JRB Associates, Inc.; *Methodology for Rating the Hazard Potential of Waste Disposal Sites*, May 5, 1980.
−National Fire Protection Association, *National Fire Codes*, Vol. 13, No. 49, 1977.
−Professional judgment based on information contained in the U.S. Coast Guard CHRIS Hazardous Chemical data, 1978, and existing literature.

Values given for ignitability, reactivity, and volatility in the Table are taken from 40 CFR part 300, Appendix A. The above−referenced documents, or EPA, should be referred to for values not shown in the table.

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Table 13 TOXICITY RATINGS
Level 0 = No Toxicity
This designation is given to materials which fall into one of the following categories: (a) Materials which cause no harm under any conditions of normal use. (b) Materials which produce toxic effects on humans only under the most unusual conditions or by overwhelming dosages.
Level 1 = Slight Toxicity
(a) Acute local. Materials which on single exposures lasting seconds, minutes, or hours cause only slight effects on the skin or mucous membranes regardless of the extent of the exposure. (b) Acute systemic. Materials which can be absorbed into the body by inhalation, ingestion, or through the skin and which produce only slight effects following single exposures lasting seconds, minutes, or hours, or following ingestion of a single dose, regardless of the quantity absorbed or the extent of the exposure. (c) Chronic local. Materials which on continuous or repeated exposures extending over periods of days, months, or years cause only slight and usually reversible harm to the skin or mucous membranes. The extent of exposure may be great or small. (d) Chronic systemic. Materials which can be absorbed into the body by inhalation, ingestion, or through the skin and which produce only slight and usually reversible effects extending over days, months, or years. The extent of the exposure may be great or small. In general, those substances classified as having slight toxicity produce changes in the human body which are readily reversible and which will disappear following termination of exposure, either with or without medical treatment.
Level 2 = Moderate Toxicity
(a) Acute local. Materials which on single exposure lasting seconds, minutes, or hours cause moderate effects on the skin or mucous membranes. These effects may be the result of intense exposure for a matter of seconds or moderate exposure for a matter of hours. (b) Acute systemic. Materials which can be absorbed into the body by inhalation, ingestion, or through the skin and produce moderate effects following single exposures lasting seconds, minutes, or hours, or following ingestion of a single dose. (c) Chronic local. Materials which on continuous or repeated exposures extending over periods of days, months, or years cause moderate harm to the skin or mucous membranes. (d) Chronic systemic. Materials which can be absorbed into the body by inhalation, ingestion, or through the skin and which produce moderate effects following continuous or repeated exposures extending over periods of days, months, or years. Those substances classified as having ”moderate toxicity” may produce irreversible as well as reversible changes in the human body. These changes are not of such severity as to threaten life or to produce serious physical impairment.
Level 3 = Severe Toxicity
(a) Acute local. Materials which on single exposure lasting seconds or minutes cause injury to skin ormucous membranes of sufficient severity to threaten life or to cause permanent physical impairment or disfigurement. (b) Acute systemic. Materials which can be absorbed into the body by inhalation, ingestion, or through the skin and which can cause injury of sufficient severity to threaten life following a single exposure lasting seconds, minutes, or hours, or following ingestion of a single dose. (c) Chronic local. Materials which on continuous or repeated exposures extending over periods of days, months, or years can cause injury to skin or mucous membranes of sufficient severity to threaten life or cause permanent impairment, disfigurement, or irreversible change. (d) Chronic systemic. Materials which can be absorbed into the body by inhalation, ingestion or through the skin and which can cause death or serious physical impairment following continuous or repeated exposures to small amounts extending over periods of days, months, or years.

Note: The source of this table is 40 CFR part 300, Appendix A, Table 6, and is based on information taken from: Sax, N.I.; *Dangerous Properties of Industrial Materials, 4th Edition*, 1975, and *5th Edition*, 1979.

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Table 14

TOXICITY RATINGS

Level	Material
0	Materials which on exposure under fire conditions would offer no health hazard beyond that of ordinary combustible material.
1	Materials only slightly hazardous to health. It may be desirable to wear self−contained breathing apparatus.
2	Materials hazardous to health, but areas may be entered freely with self−contained breathing apparatus.
3	Materials extremely hazardous to health, but areas may be entered with extreme care. Full protective clothing, including self−contained breathing apparatus, rubber gloves, boots, and bands around legs, arms and waist should be provided. No skin surface should be exposed.
4	A few whiffs of the gas or vapor could cause death; or the gas, vapor, or liquid could be fatal on penetrating the fire fighters' normal full protective clothing which is designed for resistance to heat. For most chemicals having a Health 4 rating, the normal full protective clothing available to theaverage fire department will not provide adequate protection against skin contact with these materials. Only special protective clothing designed to protect against the specific hazard should be worn.

Note: The source of this table is 40 CFR part 300, Appendix A, Table 7, and is based on information taken from: National Fire Protection Association, *National Fire Codes*, Vol. 13, No. 49, 1977.

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Table 15
PERSISTENCE (BIODEGRADABILITY) OF SOME ORGANIC COMPOUNDS

VALUE = 3 HIGHLY PERSISTENT COMPOUNDS	
aldrin	heptachlor
benzopyrene	heptachlor epoxide
benzothiazole	1,2,3,4,5,7,7−heptachloronorbornene
benzothiophene	hexachlorobenzene
benzyl butylphthalate	hexachloro−1,3−butadiene
bromochlorobenzene	hexachlorocyclohexana
bromoform butanol	hexachloroethane
bromophenyl phyntl ether	methyl benzothiazola
chlordane	pentachlorobiphenyl
chlorohydroxybenzephenone	pentachlorophenol
bis−chloroisoprophyl ether	1,1,3,3−tetrachloroacetone
m−chloronitrobenzene	tetrachlorobiphenyl
thiomethylbenzothiazole	1,3−dimethyl naphthalene
DDT	trichlorobenzene
dibromobenzene	trichlorobiphenyl
dibutylphthalate	trichlorofluoromethane
1,4−dichlorobenzene	2,4,6−trichlorophenol
dichlorodifluouroethane	triphenyl phosphate
dieldrin	bromodichloromethane
diethylphthalate	bromoform
di(2−ethylhexyl)phthalatedihexyl phthalate	carbon tetrachloride
di−isobutyl phthalate	chloroform
dimethylphthalate	chloromochloromethane
4,6−dinitro−2−aminophenol	dibromodichloroethane
diproply phthalate	tetrachloroethane
endrin	1,1,2−trichloroethane
VALUE = 2 PERSISTENT COMPOUNDS	
acenaphthylene	cis−2−ethyl−4−methyl−1,3−dioxolane
atrazine	trans−2−ethyl−4−methyl−1, 3−dioxolane
(diethyl) atrazine	guaiacol
barbital	2−hydroxyadiponitrile
borneol	isophorone
bromobenzene	indene
camphor	isoborneol
chlorobenzene	isopropanyl−r−isopropyl benzene
1,2−bis−chloroethoxy ethane	2−methoxy biphenyl
b−chloroethyl methyl ether	methyl biphenyl
chloromethyl ether	methyl chloride
chloromethyl ethyl ether	methylindane
3−chloropyridine	methylene chloride
di−t−butyl−p−benzoquinone	nitroanisole
dichloroethyl ether	nitrobenzene
dihydrocarvone	1,1,2−trichloroethylene
dimethyl sulfoxide	trimethyl−trioxo−hexahydro−triazine isomer
2,6−dinitrotoluene	

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Table 15
PERSISTENCE (BIODEGRADABILITY) OF SOME ORGANIC COMPOUNDS

VALUE = 1 SOMEWHAT PERSISTENT COMPOUNDS	
acetylene dichloride	isoprophyl benzene
behenic acid, methyl ester	limonene
benzene	methyl ester of lignoceric acid
benzene sulfonic acid	methane
butyl benzene	2−methyl−5−ethyl−pyridine
butyl bromide	methyl naphthalene
e−caprolactam	methyl palmitate
carbon−disulfide	methyl phenyl carbinol
o−cresol	methyl stearate
decane	naphthalene
1,2−dichloroethane	nonane
1,2−dimethoxy benzene	octane
pentane	octyl chloride
1,4−dimethyl phenol	phenyl benzoate
dioctyl adipate	phthalic anhydride
n−dodecane	propylbenzene
ethyl benzene	1−terpineol
2−ethyl−n−hexane	toluene
o−ethyltoluene	vinyl benzene
isodecane	xylene
VALUE = 0 NONPERSISTENT COMPOUNDS	
acetaldehyde	methyl benzoate
acetic acid	3−methyl butanol
acetone	methyl ethyl ketone
acetophenone	2−methylpropanol
benzoic acid	octadecane
di−isobutyl carbinol	pentadecane
docosane	pentanol
eicosane	propanol
ethanol	propylamine
ethylamine	tetradecane
hexadecane	n−tridecane
methanol	n−undecane

Note: The source of this table is 40 CFR part 300, Appendix A, Table 5., and is based on information from: JRB Associates, Inc; *Methodology for Rating the Hazards Potential for Waste Disposal Sites*, May 5, 1980.

Table 16
LEACHATE STRENGTH

Leachate COD in mg/L	Assigned Value
1,000−10,000	2
10,000−20,000	4
20,000−30,000	6
30,000−40,000	8
>40,000	10

(f) *Waste quantity.* Waste quantity includes all hazardous and nonhazardous substances received at a site or facility. Do not include amounts of contaminated soil or water; in such cases, the substance may be estimated. On occasion, it may be necessary to convert data to a common unit to combine them. In such cases, 1 ton = 1 cubic yard = 4 drums and for the purpose of converting bulk storage, 1 drum = 50 gallons. Values for waste quantity are shown in Table 17.

Table 17
WASTE QUANTITY

Hazardous Substance			Total Waste Quantity			
Quantity		0	1−500	501−2000	2001−8000	>8000 Drums
Drums	Tons or yd^3	0	1−125	126−500	501−2000	>2000 tons or yd^3
0	0	0	1	2	3	4
1−500	1−125	—	2	3	4	5
501−2000	126−500	—	—	4	5	6
2001−8000	501−2000	—	—	—	6	7
>8000	>2000	—	—	—	—	8

(5) POTENTIAL IMPACTS. (a) *Groundwater use.* Groundwater use indicates the nature of the use made of groundwater within 3 miles of a substance of concern, including the geographical extent of the measurable concentration of the substance in the groundwater. Groundwater use values are shown in Table 18.

Table 18
GROUNDWATER USE

Groundwater Use	Assigned Value
Commercial, industrial or irrigation; and another water source presently available: groundwater not used, but usable for drinking water	1
Drinking water with municipal water from alternate unthreatened sources presently available (i.e., minimal hookup requirements); or commercial, industrial or irrigation with no other water source presently available	2
Drinking water; no municipal water from alternate unthreatened sources presently available	3

(b) *Distance to wells and population.* Distance to nearest well and population served have been combined in the matrix shown in Table 19 to reflect the important relationship between the distance of a population from substances of concern and size of the population served by groundwater that might be contaminated by those substances. To determine the overall value for this com-

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bined factor, score each factor individually as discussed in pars. (c) and (d). Match the individual values assigned with the values in the matrix for the total score.

Table 19
SERVICE VALUES

	Value for Distance to Nearest Well				
Value for population served	**0**	**1**	**2**	**3**	**4**
0	0	0	0	0	0
1	0	4	6	8	10
2	0	8	12	16	20
3	0	12	18	24	30
4	0	16	24	32	35
5	0	20	30	35	40

(c) *Distance to nearest well.* Distance to nearest well is measured from the substance of concern to the nearest water supply well. If the actual distance to the nearest well is unknown, use the distance between the substance and the nearest occupied building not served by a public water supply. Distance values are shown in Table 20.

Table 20
DISTANCE TO NEAREST WELL

Distance to Well	Assigned Value
>3 miles	0
2 to 3 miles	1
1 to 2 miles	2
2,000 feet to 1 mile	3
<2,000 feet	4

(d) *Population served.* Population served by groundwater is an indicator of the population at risk, which includes residents as well as others who would regularly use the water such as workers in factories or offices and students. Include employees in restaurants, motels, or campgrounds but exclude customers and travelers passing through the area in autos, buses or trains. If aerial photography is used, and residents are known to use groundwater, assume each dwelling unit has 2.8 residents. Where groundwater is used for irrigation, convert to population by assuming 1.5 persons per acre of irrigated land. The well or wells of concern must be within 3 miles of the substances, including the area of known groundwater contamination, but the "population served" need not be since water supplies may be distributed over a wider area. Likewise people within 3 miles who do not use water from the groundwater are not to be counted. Population values are contained in Table 21.

Table 21
POPULATION AT RISK–GROUNDWATER

Population	Assigned Value
0	0
1 to 100	1
101 to 700	2
701 to 1,500	3
1,501 to 5,000	4
> 5,000	5

History: Cr. Register, April, 1994, No. 460, eff. 5–1–94.

NR 710.19 Surface water route. (1) OBSERVED RELEASE. Direct evidence of release to surface water, including wetlands, may be quantitative evidence that the facility or site is releasing contaminants into surface water or visual evidence of an active discharge which flows to a surface water. Quantitative evidence could be the measurement of levels of contaminants from a site or facility in surface water, either at the site or facility or downhill from it, that represents an increase over background levels. Visual evidence of a discharge must flow to a surface water which is readily identifiable in the field, from topographic maps, or from air photographs. If direct evidence of release has been obtained (regardless of frequency), enter a value of 45 on line 1 of the worksheet (Figure 5) and omit the evaluation of the route characteristics in sub. (2) and containment factors in sub. (3). If there is no direct evidence of release, enter a value of zero on line 1 and continue with the scoring procedure discussed in sub. (2).

(2) ROUTE CHARACTERISTICS. (a) *Slope.* Facility slope and intervening terrain are indicators of the potential for contaminated runoff or spills at a site or facility to be transported to surface water. The site or facility slope is an indicator of the potential for runoff or spills to leave the site or facility. Intervening terrain refers to the average slope of the shortest path which would be followed by runoff between the site or facility boundary and the nearest downhill surface water. The rating factor can be assessed using topographic maps. Table 22 shows values assigned to various facility conditions.

Table 22
VALUES FOR FACILITY SLOPE AND INTERVENING TERRAIN

		Intervening Terrain				
Facility Slope		**Terrain Average Slope <3%; or Site Separated from Water Body by Areas of Higher Elevation**	**Terrain Average Slope 3–5%**	**Terrain Average Slope 5–8%**	**Terrain Average Slope >8%**	**Site in Surface Water**
Facility is closed basin		0	0	0	0	3
Facility has average slope	<3%	0	1	1	2	3
Average slope	3–5%	0	1	2	2	3
Average slope	5–8%	0	2	2	3	3
Average slope	>8%	0	2	3	3	3

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Figure 5
SURFACE WATER ROUTE WORKSHEET

Rating Factor	Assigned Value (circle one)	Multiplier	Score	Max. Score	Ref. Section
[1] Observed Release	0 45	1		45	sub.(1)
If observed release is given a score of 45, proceed toline [4].					
If observed release is given a score of 0, proceed to line [2].					
[2] Route Characteristics					sub.(2)
Facility Slope and Intervening Terrain	0 1 2 3	1		3	
Run−off Potential	0 1 2 3	1		3	
Distance to Nearest Surface Water	0 1 2 3	2		6	
Physical State	0 1 2 3	1		3	
	Total Route Characteristics Score			15	
[3]Containment	0 1 2 3	1		3	sub.(3)
[4]Waste Characteristics					sub.(4)
Toxicity/Persistence	0 3 6 9 12 15 18	1		18	
Leachate Strength	0 2 4 6 8 10	1		10	
Hazardous Waste Quantity/Total Waste Quantity	0 1 2 3 4 5 6 7 8	1		8	
	Total Waste Characteristics Score			26	
[5]Potential Impacts					sub.(5)
Surface Water Use	0 1 2 3	3		9	
Distance to a Sensitive Environment	0 1 2 3	2		6	
Population Served/Distance to Water Intake Downstream	0 4 6 8 10 12 16 18 20 24 30 32 35 40	1		40	
	Total Potential Impacts			55	
[6]If line [1] is 45, multiply [1] x [4] x [5]				64,350	
If line [1] is 0, multiply [2] x [3] x [4] x [5]					
[7]Divide line [6] by 64,350 and multiply by 100			S_{gw} =		

(b) *Runoff potential.* Vegetative cover and surface soils at a site or facility are indicators of the potential of contaminated runoff or spills at a site or facility to be transported to a surface water. Table 23 shows the assigned values for runoff potential based on these 2 indicators.

Table 23
RUNOFF POTENTIAL

	Vegetative Cover			
Soil Type	None	Poorly Established (Sparse Cover)	Established (Good Cover)	Well Established (Lush)
Sand	2	1	0	0
Silty Sand	2	1	0	0
Sandy Loam	2	2	1	0
Silty Loam	2	2	1	0
Peaty Topsoil	3	2	1	1
Clay Loam	3	2	1	1
Silty Clay	3	3	2	1
Clay	3	3	2	1

(c) *Distance to surface water.* Distance to the nearest surface water is the shortest distance from the substance of concern, not the facility or property boundary, to the nearest downhill body of surface water, such as a lake, stream or intermittent stream, to which runoff can be expected to flow. This factor indicates the potential for pollutants flowing overland and into surface water bodies. In areas of extreme topographic relief, the migratory distance is to be estimated, and that distance used for determining a value. Values for distance to surface water are shown in Table 24.

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Table 24
DISTANCE TO SURFACE WATER

Distance	Assigned Value
>2 miles	0
1 to 2 miles	1
1,000 feet to 1 mile	2
<1,000 feet	3

(d) *Physical state.* Physical state of the waste is assigned a value using the procedures in s. NR 710.17 (2) (d).

(3) CONTAINMENT. Containment is a measure of the means that have been taken to minimize the likelihood of a contaminant entering surface water either at the site or facility or beyond the site or facility boundary. Examples of containment are diversion structures and the use of sealed containers. If more than one type of containment is used at a site or facility, evaluate each separately using Table 25 and assign the highest score.

Table 25
CONTAINMENT VALUE FOR SURFACE WATER ROUTE

A. Surface Impoundment	Assigned Value	C. Piles	Assigned Value
Sound diking or diversion structure, adequate freeboard, and no erosion evident.	0	Piles are covered and surrounded by sound diversion or containment system.	0
Sound diking or diversion structure, but inadequate-freeboard.	1	Piles covered, waste unconsolidated, diversion or containment system not adequate.	1
Diking not leaking, but potentially unsound.	2	Piles not covered, waste unconsolidated, and diversion or containment system potentially unsound.	2
Diking unsound, leaking, or in danger of collapse.	3	Piles not covered, wastes unconsolidated, and no diversion or containment, or diversion system leaking or in danger of collapse.	3
B. Containers	**Assigned Value**	**D. Landfill**	**Assigned Value**
Containers sealed, in sound condition, and surrounded by sound diversion or containment system.	0	Landfill slope precludes runoff, landfill surrounded by sound diversion system, or landfill has adequate cover material.	0
Containers sealed and in sound condition, but not surrounded by sound diversion or containment system.	1	Landfill not adequately covered and diversion system sound.	1
Containers leaking and diversion or containment structures potentially unsound.	2	Landfill not covered and diversion system potentially unsound.	2
Containers leaking, no diversion or containment structures or diversion structures leaking or in danger of collapse.	3	Landfill not covered and no diversion system present, or diversion system unsound.	3

(4) WASTE CHARACTERISTICS. Evaluate waste characteristics for the surface water route with the procedures described in s. NR 710.17 (4).

(5) POTENTIAL IMPACTS. (a) *Surface water.* Surface water use brings into the rating process the use of the surface water downstream from the site or facility. The use or uses of interest are those associated with water taken from surface waters within a distance of 3 miles from the location of the hazardous substance. Use values are contained in Table 26.

Table 26
SURFACE WATER USE

Surface Water Use	Assigned Value
Not currently used	0
Commercial or industrial	1
Irrigation, economically important resources, commercial food preparation, or recreation	2
Drinking water	3

(b) *Sensitive environments.* Distance to sensitive environment refers to the distance from the substance of concern, not the site or facility boundary, to an area containing an important biological resource or to a fragile natural setting that could suffer an especially severe impact from pollution. Table 27 provides guidance on assigning a value to this rating factor.

(c) *Population.* Population served by surface water with water intake within 3 miles downstream from the site or facility, or 1 mile in static surface water such as a lake, is a rough indicator of the potential hazard exposure of the nearby population served by potentially contaminated surface water. Measure the distance from the probable point of contaminant entry to surface water following the surface flow. The population includes residents as well as others who would regularly use the water such as workers in factories or offices and students. Include employees in restaurants, motels, or campgrounds but exclude customers and travelers passing through the area in autos, buses and trains. The distance is measured from the substance of concern, including observations in stream or sediment samples, regardless of site or facility boundaries. Where only residential houses can be counted (e.g., from an aerial photograph), and residents are known to be using surface water, assume 2.8 individuals per dwelling unit. Where surface water is used for irrigation, convert to population by assuming 1.5 persons per acre of land irrigated. Population values are shown in Table 28.

Table 27
VALUES FOR SENSITIVE ENVIRONMENT — SURFACE WATER

Assigned Value =	0	1	2	3
Distance to wetlands or critical habitats of endangered species	>2miles	1 to 2 miles	$^1/_2$ mile to 1 mile	$^1/_2$ mile
Distance to national or state wildlife refuge, or state fish refuge	>1 mile	$^1/_2$ to 1 mile	$^1/_4$ to $^1/_2$ mile	<$^1/_4$ mile
Distance to wild or scenic river	>$^1/_2$ mile	$^1/_4$ to $^1/_2$ mile	400 ft to $^1/_4$ mile	<400 ft.
Distance to designated scientific areas	>1 mile	$^1/_2$ to 1 mile	$^1/_4$ to $^1/_2$ mile	<$^1/_4$ mile
Distance to designated natural areas	>$^1/_2$ mile	$^1/_4$ to $^1/_2$ mile	500 ft. to $^1/_4$ mile	<500 ft.

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Table 28
POPULATION AT RISK —SURFACE WATER

	Distance to Water Intake				
Population	**>3 miles**	**2 to 3 miles**	**1 to 2 miles**	**2,001 feet to 1 mile**	**0 to 2,000 feet**
0	0	0	0	0	0
1 to 100	0	4	6	8	10
101 to 700	0	8	12	16	20
701 to 1,500	0	12	18	24	30
1,501 to 5,000	0	16	24	32	35
>5,000	0	20	30	35	40

History: Cr. Register, April, 1994, No. 460, eff. 5−1−94.

NR 710.21 Air route. (1) OBSERVED RELEASE. The only acceptable evidence of release for the air route is data that show levels of a contaminant at or in the vicinity of the site or facility that significantly exceed background levels, regardless of the frequency of occurrence. If such evidence exists, enter a value of 45 on line one of the air route worksheet in Figure 6. If an observed release is scored, complete the analysis as described in subs. (2) and (3). If observed release is assigned a zero value, then Sa = 0, and no additional analysis is necessary. Record the date, location, and the sampling methods and procedures for monitoring data on the worksheet. Data based on transitory conditions due to facility disturbance by investigative personnel are not acceptable.

(2) WASTE CHARACTERISTICS. (a) *General.* The substance observed for scoring the release category may be different from the substance used to score waste characteristics.

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(b) *Reactivity and incompatibility.* 1. Reactivity and incompatibility are measures of the potential for sudden release of concentrated air pollutants. These factors are evaluated independently, and the highest value for either is recorded on the worksheet.

Figure 6
AIR ROUTE WORKSHEET

Rating Factor	Assigned Value (circle one)	Multiplier	Score	Max. Score	Ref. Section
[1]Observed Release	0 45	1		45	
Date and Location:					
Sampling Procedures:					
If line [1] is 0 then S_a = 0. Enter on line[5].					
If line [1] is 45 then proceed to line [2].					
[2]Waste Characteristics					
Reactivity and Incompatibility	0 1 2 3	1		3	
Toxicity	0 1 2 3	3		9	
Hazardous Waste Quantity/Total Waste Quality	0 1 2 3 4 5 6 7 8	1		8	
	Total Route Characteristics Score			20	
[3]Potential Impacts					
Population Within 4−Mile Radius	0 9 12 15 18 21 24 27 30	1		30	
Distance to Sensitive Environment	0 1 2 3	2		6	
Land Use	0 1 2 3	1		3	
	Total Potential Impacts Score			39	
[4]Multiply [1] x [2] x [3]				35,100	
[5]Divide line [4] by 35,100 and Multiply by 100			S_a=		

2. Reactivity provides a measure of the fire or explosion threat at a facility. Assign a value based on the reactivity classification given in Table 29. Reactivity ratings for a number of common chemicals are given in Table 12.

Table 29
REACTIVITY RATINGS

Level	Description	Assigned Value
0	Materials which are normally stable even under fire exposure conditions and which are not reactive with water.	0
1	Materials which in themselves are normally stable but which may become unstable at elevated temperatures and pressures or which may react withwater with some release of energy but not violently.	1
	Materials which in themselves are normally unstable and readily undergo violent chemical change but do not detonate. Includes materials which can undergo chemical change with rapid release of energy at normal temperatures and pressures or which can undergo violent chemical change at elevated temperatures and pressures. Also includes those materials which may react violently with water or which may form potentially explosive mixtures with water.	2
3	Materials which in themselves are capable of detonation or of explosivede composition or of explosive reaction but which requires a strong initiating source or which must be heated under confinement before initiation. Includes materials which are sensitive to thermal or mechanical shock at elevated temperatures and pressures or which react explosively with water without requiring heat or confinement.	3
4	Materials which in themselves are readily capable of detonation or of explosive decomposition or explosive reaction at normal temperatures and pressures. Includes materials which are sensitive to mechanical or localized thermal shock.	3

Note: The source of this table is 40 CFR part 300, Appendix A, Table 11; and is based on information taken from: National Fire Protection Association, *National Fire Codes,* Vol. 13, No. 49, 1977.

3. Incompatibility provides a measure of the increased hazard when substances are mixed under uncontrolled conditions which may lead to production of heat, pressure, fire, explosion, violent reaction, toxic dusts, mists, fumes of gases, or flammable fumes or gases. Table 32 provides examples of incompatible combinations of materials. Incompatibility values are shown in Table 30.

Table 30
INCOMPATIBILITY

Incompatibility	Assigned Value
No incompatible substances are present	0
Present but do not pose a hazard	1
Present and may pose a future hazard	2
Present and posing an immediate hazard	3

(c) *Toxicity.* Toxicity should be rated for the most toxic of the substances that can reasonably be expected to be transported away from the site or facility via the air route. Using the information given in Tables 12, 13 and 14 (s. NR 710.17 (4)), assign values as shown in Table 31.

Table 31
TOXICITY

Toxicity Level from Table 13 or Table 14	Assigned Value
Level 0	0
Level 1	1
Level 2	2
Level 3 or 4	3

(d) *Waste quantity.* Waste quantity is assigned a value as described in s. NR 710.17 (4) (f).

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Table 32
INCOMPATIBLE MATERIALS

In the lists below, the mixing of a Group A material with a Group B material may have the potential consequence as noted.	
Group 1−A Acetylene sludge Alkaline caustic liquids Alkaline cleaner Alkaline corrosive liquids Alkaline corrosive battery fluids Caustic wastewater Lime sludge and other corrosive alkalies Lime wastewater Lime and water Spent caustic	Group 1−B Acid sludge Acid and water Battery acid Chemical cleaners Electrolyte acid Etching acid liquid or solvent Pickling liquor and other corrosive acids Spent acid Spent mixed acid Spent sulfuric acid
Potential consequences: Heat generation; violent reaction.	
Group 2−A Aluminum Beryllium Calcium Lithium Potassium Sodium Zincpowder Other reactive metals and metal hybrids	Group 2−B Any waste in Group 1−A or 1−B
Potential consequences: Fire or explosion; generation of flammable hydrogen gas.	
Group 3−A Alcohols Water	Group 3−B Any concentrated waste in Groups 1−A or1−B Calcium Lithium Metal hydrides Potassium SO2C12, SOC12, PC12,CH3, SiC13 Other water−reactive waste
Potential consequences: Fire, explosion or heat generation; generation of flammable or toxic gases.	
Group 4−A Alcohols Aldehydes Halogenated hydrocarbons Nitratedhydrocarbons Unsaturated hydrocarbons Other reactive organic compounds and solvents	Group 4−B Concentrated Group 1−A or 1−B wastes Group 2−A wastes
Potential consequences: Fire, explosion or violent reaction.	
Group 5−A Spent cyanide and sulfide solutions	Group 5−B Group 1−B wastes
Potential consequences: Generation of toxic hydrogen cyanide or hydrogen sulfide gas.	
Group 6−A Chlorates Chlorine Chlorites Chromic acid Hypochlorites Nitrates Nitric acid, fuming Perchlorates Permanganates Peroxides Other strong oxidizers	Group 6−B Acetic acid or other organic acids Concentrated mineralacids Group 2−A wastes Group 4−A wastes Other flammable and combustible wastes
Potential consequences: Fire, explosion or violent reaction.	

Note: The sources of this table is 40 CFR part 300, Appendix A, Table 12; and is based on information taken from: *Hazardous Waste Management Law, Regulations, and Guidelines for the Handling of Hazardous Wastes,* California Department of Health, February, 1975.

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(3) POTENTIAL IMPACTS. (a) *Population.* Population within a 4−mile radius is an indicator of the population which may be harmed should substances be released to the air. The distance is measured from the location of the substances, not from the site or facility boundary. The population to be counted includes persons residing within the 4−mile radius as well as transients such as workers in factories, offices, restaurants, motels or students. It excludes travelers passing through the area. If aerial photography is used in making the count, assume 2.8 individuals per dwelling unit. Select the highest value contained in Table 33 for this rating factor.

Table 33
AIR MIGRATION POPULATION AT RISK

Population	1 to 4 miles	1/2 to 1 mile	1/4 to 1/2 mile	0 to 1/4 mile
0	0	0	0	0
1 to 100	9	12	15	18
101 to 700	12	15	18	21
701 to 1,500	15	18	21	24
1,501 to 5,000	18	21	24	27
>5,000	21	24	27	30

(b) *Sensitive environments.* Distance to a sensitive environment is an indicator of the likelihood that a region that contains important biological resources or that is a fragile natural setting would suffer serious damage if substances were to be released from the site or facility. Assign a value from Table 27.

(c) *Land use.* Land use indicates the nature and level of human activity in the vicinity of a site or facility. Assign highest applicable value from Table 34.

Table 34
VALUES FOR LAND USE AIR ROUTE AND FIRE AND EXPLOSION

Assigned Value	0	1	2	3
Distance to Commercial−Industrial	> 1 mile	1/2 to 1 mile	1/4 to 1/2 mile	< 1/4 mile
Distance to National/State Parks, Forests, Wildlife Reserves, Scientific and Natural Areas, Wetlands and Residential Areas				
	>2 miles	1 to 2 miles	1/2 to 1 mile	< 1/2 mile
Distance to Agricultural Lands (in Production within 5 years):				
Ag Land	>1 mile	1/2 to 1 mile	1/4 to 1/2 mile	< 1/4 mile
Prime Ag Land	>2 miles	1 to 2 miles	1/2 to 1 mile	< 1/2 mile
Distance to Historic/Landmark Sites (National Register of Historic Places and National Natural Landmarks)			Within view of site or if site is subject to significant impacts (3)	

History: Cr. Register, April, 1994, No. 460, eff. 5−1−94.

NR 710.23 Computing the migration hazard mode score, SM. To compute SM complete the worksheet, Figure 7, using the groundwater score, Sgw, obtained using the instructions in s. NR 710.17, the surface water score, Ssw, obtained using the instructions in s. NR 710.19, and the air route score, Sa, obtained using the instructions in s. NR 710.21.

Figure 7
WORKSHEET FOR COMPUTING THE MIGRATION SCORE

	S	S2
Groundwater Route Score (S_{gw})		
Surface Water Route Score (S_{sw})		
Air Route Score (S_a)		
$S^2_{gw} + S^2_{sw} + S^2_a$		
$(S^2_{gw} + S^2_{sw} + S^2_a)0.5$		
$(S^2_{gw} + S^2_{sw} + S^2_a)^{0.5}/1.73$	S_M=	

History: Cr. Register, April, 1994, No. 460, eff. 5−1−94.

NR 710.25 Fire and explosion. (1) NOTIFICATION. Compute a score for the fire and explosion hazard mode, SFE, when the local fire chief has provided written notice to the department that the site or facility presents a significant fire or explosion threat to the public or to a sensitive environment. SFE is also scored if there is a demonstrated fire or explosion threat based on field observations (e.g., combustible gas indicator readings). The threat must be documented to complete the worksheet for fire and explosion — Figure 8.

(2) CONTAINMENT. Containment is an indicator of the measures that have been taken to minimize or prevent substances at the site or facility from catching fire or exploding. Normally, it will be given a value of 3 on the worksheet shown in Figure 8. If no substances that are individually ignitable or explosive are present and those that may be ignitable or explosive in combination are segregated and isolated so that they cannot come together to form incompatible mixtures, assign this factor a value of 1.

Figure 8
FIRE AND EXPLOSION WORKSHEET

Rating Factor	AssignedValue (circle one)	Multiplier	Score	Max. Score	Ref. Section
[1]Containment	13	1		3	sub. (2)
[2]Waste Characteristics					sub. (3)
Direct Evidence	0 3	1		3	
Ignitability	0 1 2 3	1		3	
Reactivity	0 1 2 3	1		3	
Incompatibility	0 1 2 3	1		3	
Waste Quantity/Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8	

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	Total Route Characteristics Score			20	
[3]Potential Impacts					sub. (4)
Distance to Nearest Population	0 1 2 3 4 5	1		5	
Distance to Nearest Building	0 1 2 3	1		3	
Distance to Sensitive Environment	0 1 2 3	1		3	
Land Use	0 1 2 3	1		3	
Population Within 2−Mile Radius	0 1 2 3 4 5	1		5	
Buildings Within 2−Mile Radius	0 1 2 3 4 5	1		5	
	Total Potential Impacts Score			24	
[4] Multiply [1] x [2] x [3]				1,440	
Divide line [4] by 1,440 and multiply by 100			S_{FE}=		

(3) WASTE CHARACTERISTICS. (a) *Evidence.* Direct evidence of ignitability or explosion potential may exist in the form of measurements with appropriate instruments. If so, assign this factor a value of 3; if not, assign a value of 1.

(b) *Ignitability.* Ignitability is an indicator of the threat of fire at a site or facility and the accompanying potential for release of air contaminants. Assign this rating factor a value based on the classification schemes shown in Table 35 and Table 36. Table 12 gives ignitability values for a number of common chemicals.

Table 35
IGNITABILITY LEVELS AND ASSIGNED VALUES

Ignitability Level	Description	Assigned Value
0	Materials that will not burn	0
1	Materials that must be preheated before ignition can occur. Most combustible solids have a flammability rating of 1	1
2	Liquids which must be moderately heated before ignition will occur and solids that readily give off flammable vapors	2
3	Liquids which can be ignited under all normal temperature conditions. Any materials that ignite spontaneously at normal temperatures in air	3
4	Very flammable gases, very volatile flammable liquids, and materials that in the form of dusts or mists readily form explosive mixtures when dispersedin air	3

Note: The source of this table is 40 CFR part 300, Appendix A, Table 13, and is based on information taken from: National Fire Protection Association, *National Fire Codes*, Vol. 13, No. 49, 1977.

Table 36
IGNITABILITY

Ignitability Level from Table 35 Flashpoint	Assigned Value
Level 0 >200°F	0
Level 1 140°F to 200°F	1
Level 2 80°F to 140°F	2
Level 3 or 4 <80°F	3

(c) *Reactivity.* Reactivity values are assigned as described in s. NR 710.21 (2).

(d) *Incompatibility.* Incompatibility values are assigned as described in s. NR 710.21 (2).

(e) *Waste quantity.* Waste quantity values are assigned as described in s. NR 710.17 (4) (f).

(4) POTENTIAL IMPACTS. (a) *Distance to nearest population.* Distance to nearest population is the distance from the hazardous substance to the nearest building or area in which one or more persons are likely to be located either for residential, educational, business, occupational or recreational purposes. It is an indicator of the potential for harm to humans from fire and explosion. The building or area need not be off−site. Distance values are shown in Table 37.

Table 37
DISTANCE TO NEAREST POPULATION

Distance	Assigned Value
>2 miles	0
1 mile − 2 miles	1
$^1/_2$ mile − 1 mile	2
201 feet − $^1/_2$ mile	3
51 feet − 200 feet	4
<50 feet	5

(b) *Distance to nearest building.* Distance to nearest building is an indicator of the potential for property damage as a result of fire or explosion. Values for distance to nearest building are shown in Table 38.

Table 38
DISTANCE TO NEAREST BUILDING

Distance	Assigned Value
>$^1/_2$ mile	0
201 feet − $^1/_2$ mile	1
51 feet − 200 feet	2

(c) *Sensitive environments.* Distance to nearest sensitive environment is measured from the substance of concern, not from the site or facility boundary. It is an indicator of potential harm to a sensitive environment from fire or explosion at the site or facility. Select the highest value using the information provided in Table 39, except assign a value of 3 where fire could be expected to spread to a sensitive environment even though that environment is more than 100 feet from the substance.

Table 39
VALUES FOR SENSITIVE ENVIRONMENTS— FIRE AND EXPLOSION

Assigned Value =	0	1	2	3
Distance to Wetlands	>100 feet	−	−	<100 feet
Distance to Critical Habitat	>$^1/_2$ mile	1,000 feet to $^1/_2$ mile	100 to 1,000 feet	<100 feet

(d) *Land use.* Assign land use value as in s. NR 710.19 (3) (c).

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(e) *Population at risk.* Population within a 2−mile radius of the substance of concern, not from the site or facility boundary, is a rough indicator of the population at risk in the event of fire or explosion at a facility. The population to be counted includes those residing within the 2−mile radius as well as people regularly in the vicinity such as workers in factories, offices or students. It does not include travelers passing through the area. If aerial photography is used in making the count, assume 2.8 individuals per dwelling. This population factor is given a value from Table 40.

(f) *Buildings at risk.* The number of buildings within a 2−mile radius from the property damage that could result from fire and explosion at a facility. Building values are shown in Table 41.

Table 40
POPULATION AT RISKFIRE AND EXPLOSION

Population	Assigned Value
0	0
1 to 100	1
101 to 700	2
701 to 1,500	3
1,501 to 5,000	4
>5,000	5

Table 41
BUILDINGS AT RISKFIRE AND EXPLOSION

Number of Buildings	Assigned Value
0	0
1 to 26	1
27 to 260	2
261 to 790	3
791 to 2,600	4
>2,600	5

History: Cr. Register, April, 1994, No. 460, eff. 5−1−94.

NR 710.27 Direct contact.

(1) POTENTIAL INJURY. The direct contact hazard mode refers to the potential for injury by direct contact with substances at the site or facility.

(2) OBSERVED INCIDENT. If there is a confirmed instance in which contact with substances at the site or facility has caused injury, illness or death to humans, or domestic or wild animals, enter a value of 45 on line one of the worksheet shown in Figure 9 and proceed to line 4. Document the incident giving the date, location and pertinent details. If no such instance is known, enter "0" on line one and proceed to line 2.

(3) ACCESSIBILITY. Accessibility to substances of concern refers to the measures taken to limit access by humans or animals to substances. Accessibility values are shown in Table 42.

Table 42
ACCESSIBILITY TO WASTE

Barrier	Assigned Value
A 24−hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel) which continuously monitors and controls entry onto the facility;	0
or	
An artificial or natural barrier (e.g., a fence combined with a cliff), which completely surrounds the facility; and a means to control entry, at all times, through the gates or other entrances to the facility (e.g., an attendant, television monitors, locked entrances, or controlled roadway access to the facility).	
Security guard, but no barrier	1
A barrier, but no separate means to control entry	2
Barriers do not completely surround the facility	3

Figure 9
DIRECT CONTACT WORKSHEET

Rating Factor	Assigned Value (circle one)	Multiplier	Score	Max. Score	Ref. Section
[1]Observed Incident	0 45	1		45	sub.(2)
If line [1] is 45, proceed to line [4]					
If line [1] is 0, proceed to line [2]					
[2]Accessibility	0 1 2 3	1		3	sub. (3)
[3]Containment	0 15	1		15	sub. (4)
[4]Waste Toxicity	0 1 2 3	5		15	sub. (5)
[5]Potential Impacts					
Population Within a 1−Mile Radius	0 1 2 3 4 5	4		20	sub. (6)
Distance to a Critical Habitat	0 1 2 3	4		12	
	Total Potential Impacts Score			32	
[6]If line [1] is 45, multiply [1] x [4] x [5]					
If line [1] is 0, multiply [2] x [3] x [4] x [5]				21,600	
Divide line [6] by 21,600 and multiply by 100			S_{DC} =		

(4) CONTAINMENT. Containment indicates whether the substances of concern are accessible to direct contact. For example, if a substance at the site or facility is in surface impoundments, containers (sealed or unsealed), piles, tanks or landfills with a cover depth of less than 2 feet, or has been spilled on the ground or other surfaces easily contacted such as the bottom of [a] shallow pond or creek, assign this rating factor a value of 15. Otherwise, assign a value of zero.

(5) WASTE TOXICITY. Assign a toxicity value as described in s. NR 710.17 (4).

Removed by Register February 2001 No. 542. For current adm. code see: http://docs.legis.wisconsin.gov/code/admin_code.

(6) POTENTIAL IMPACTS. (a) *Population.* Population within one−mile radius is a rough indicator of the population that could be involved in direct contact incidents at an uncontrolled facility. Population values are shown in Table 43.

Table 43
POPULATION AT RISKDIRECT CONTACT

Population	Assigned Value
0	0
1 to 100	1
101 to 700	2
701 to 1,500	3
1,501 to 5,000	4
>5,000	5

(b) *Habitats.* Distance to a critical habitat of an endangered species is a rough measure of the probability of harm to members of an endangered species by direct contact with a substance of concern. Distance values are shown in Table 44.

Table 44
HABITATS

Distance	Assigned Value
>1 mile	0
$^1/_2$ to 1 mile	1
$^1/_4$ to $^1/_2$ mile	2
<$^1/_4$ mile	3

History: Cr. Register, April, 1994, No. 460, eff. 5−1−94.