

# Order of Magnitude Guidance

## Introduction

Order of magnitude provisions are established by the Brownfield Act, N.J.S.A. 58:10B-12j and 13e (See Appendix 1) and are implemented through several provisions of the Technical Rules (See Appendix 2).

## 1. Applicability

Order of magnitude evaluations for soil remediation standards are only applicable for the direct contact (ingestion/dermal and inhalation) exposure pathway. The following contaminants have newly adopted direct contact soil remediation standards that are an order of magnitude or more lower in concentration compared to the soil cleanup criterion concentration:

### Non-Residential

Bis(2-chloroisopropyl)ether  
Bromodichloromethane  
Bromomethane  
Chloroform  
Chloromethane  
Dibromochloromethane  
1,4-Dichlorobenzene  
1,1-Dichloroethane  
Hexachlorocyclopentadiene  
4-Methylphenol  
Naphthalene  
1,1,2,2-Tetrachloroethane  
1,1,2-Trichloroethane

### Residential

Bis(2-chloroisopropyl)ether  
Bromodichloromethane  
Chloroform  
Chloromethane  
Dibromochloromethane  
1,4-Dichlorobenzene  
1,1-Dichloroethane  
4-Methylphenol  
Naphthalene  
1,1,2,2-Tetrachloroethane  
1,1,2-Trichloroethane

Order of magnitude evaluations are also applicable for the ground water remediation standards and the surface water remediation standards.

Order of magnitude evaluations are not required for any site-specific impact to ground water soil remediation standards.

## 2. Any Increase in Remediation Standard Concentration

Any newly adopted remediation standard that increases in concentration may be used at any time during an active remediation, before or after Remedial Action Workplan (RAWP) approval or after a Remedial Action Report (RAR) approval or after a No Further Action (NFA) letter has been issued by the Department. The person responsible for conducting the remediation may place a request to the Department that the new, higher concentration remediation standard be applied at the site.

**3. Decrease in Remediation Standard Concentration – By less than an Order of Magnitude**

**a. Before RAWP or RAR approval**

Follow the “Phase In Guidance” document.

**b. After RAWP approval or issuance of NFA letter**

The Department may not compel person to use any new soil remediation standard pursuant to the Brownfield Act N.J.S.A. 58:10B-12j and 13e (See Appendix 1).

**4. Decrease in Remediation Standard Concentration - By an Order of Magnitude or More**

**a. Before RAWP or RAR approval**

The person responsible for conducting the remediation must use the new soil remediation standards.

**b. After RAW approval but prior to NFA approval**

Department may compel the person responsible for conducting the remediation to use the new soil remediation standards pursuant to N.J.S.A. 58:10B-12j (See Appendix 1).

**c. After NFA approval**

Department may compel the person responsible for the discharge of the hazardous substance to use the new soil remediation standards pursuant to N.J.S.A. 58:10B-13e (See Appendix 1).

**5. Under what conditions would the Department compel additional remediation because a new soil remediation standard decreases by an order of magnitude or more?**

**a. For sites with RAWP Approval but not NFA Approval:**

- (1) The order of magnitude evaluation applies to all contaminants listed in section 1 above.
- (2) An evaluation is needed to determine the protectiveness of the selected or the implemented remedy.
- (3) For each contaminant list in section 1 above, compare the level of contaminant at the site to the new remediation standard.
- (4) If the remedy does not control exposure to the new remediation standard, additional remediation will be required.

- (5) If the remedy continues to be protective due to the use of engineering and institutional controls, no additional remediation would be needed. Contamination, as defined by the new remediation standard, would need to be accurately reflected in the deed notice.

**b. For sites with NFA Approval:**

- (1) The order of magnitude evaluation applies to the contaminants listed in section 1 above only if the concentration of a contaminant present at the site is lower, by an order of magnitude or more, than the new remediation standard.
- (2) An evaluation is needed to determine the protectiveness of the selected or the implemented remedy.
- (3) If the remedy does not control exposure to the new remediation standard, additional remediation will be required.
- (4) If the remedy continues to be protective due to the use of engineering and institutional controls, no additional remediation would be needed. Contamination, as defined by the new remediation standard, would need to be accurately reflected in the deed notice.

**5. When will the Department require the order of magnitude evaluation?**

**a. For sites with RAWP Approval but not NFA Approval**

As these sites are active cases, the assigned Department case manager will require the person responsible for conducting the remediation to conduct the order of magnitude evaluation and perform any additional remediation pursuant to the Technical Requirements for Site Remediation (N.J.A.C. 7:26E-6.1(b)2) prior to the issuance of an NFA letter (See Appendix 2).

**b. For sites with NFA Approval**

**(1) Sites with engineering and/or institutional controls (conditional NFA)**

The person responsible for maintaining the engineering and/or institutional control must perform the order of magnitude evaluation as part of the biennial certification pursuant to the Technical Requirements for Site Remediation, N.J.A.C. 7:26E-8.5 and 8.6 (See Appendix 2).

**(2) Sites without engineering and/or institutional controls (unconditional NFA)**

The order of magnitude evaluation will be conducted whenever a site “re enters” the Site Remediation Program (i.e., an ISRA trigger, child care facility license renewal, property sale that requires update of site conditions for loan approval, etc.) pursuant to the Technical Requirements for Site Remediation, N.J.A.C. 7:26E-3.2(a).

## **Appendix 1**

### **Applicable Provisions of the Brownfield Act**

#### **N.J.S.A. 58:10B-12j**

Upon the approval by the department of a remedial action workplan, or similar plan that describes the extent of contamination at a site and the remedial action to be implemented to address that contamination, the department may not subsequently require a change to that workplan or similar plan in order to compel a different remediation standard due to the fact that the established remediation standards have changed; however, the department may compel a different remediation standard if the difference between the new remediation standard and the remediation standard approved in the workplan or other plan differs by an order of magnitude. The limitation to the department's authority to change a workplan or similar plan pursuant to this subsection shall only apply if the workplan or similar plan is being implemented in a reasonable timeframe, as may be indicated in the approved remedial action workplan or similar plan.

#### **N.J.S.A. 58:10B-13e.**

Notwithstanding the provisions of any other law, or any rule, regulation, or order adopted pursuant thereto to the contrary, whenever contamination at a property is remediated in compliance with any soil, or any groundwater or surface water remediation standards that were in effect or approved by the department at the completion of the remediation, no person, except as otherwise provided in this section, shall be liable for the cost of any additional remediation that may be required by a subsequent adoption by the department of a more stringent remediation standard for a particular contaminant. Upon the adoption of a regulation that amends a remediation standard, or where the adoption of a regulation would change a remediation standard which was otherwise approved by the department, only a person who is liable to clean up and remove that contamination pursuant to section 8 of P.L.1976, c.141 (C.58:10-23.11g), and who does not have a defense to liability pursuant to subsection d. of that section, shall be liable for any additional remediation costs necessary to bring the site into compliance with the new remediation standards except that no person shall be so liable unless the difference between the new remediation standard and the level or concentration of a contaminant at the property differs by an order of magnitude. The department may compel a person who is liable for the additional remediation costs to perform additional remediation activities to meet the new remediation standard except that a person may not be compelled to perform any additional remediation activities on the site if that person can demonstrate that the existing engineering or institutional controls on the site prevent exposure to the contamination and that the site remains protective of public health, safety and the environment pursuant to section 35 of P.L.1993, c.139 (C.58:10B-12). The burden to prove that a site remains protective is on the person liable for the additional remediation costs. A person liable for the additional remediation costs who is relying on engineering or institutional controls to make a site protective, shall comply with the provisions of subsections a., b., c. and d. of this section.

**Appendix 2**  
**Applicable provisions of the**  
**Technical Requirements for Site Remediation**

**7:26E-3.2 Preliminary assessment report**

(a) The person responsible for conducting the remediation shall prepare a preliminary assessment report which:

...

5. For each area of concern identified at the site, for which a No Further Action Letter was issued, the person responsible for conducting the remediation shall compare the contaminant concentrations remaining in the area of concern or the site with the Department's applicable remediation standards at the time of comparison, and the report shall contain a recommendation that either:

i. The area of concern contains contaminants above the numerical remediation standard applicable at the time of comparison, however, no further remediation is required because:

(1) The contaminant concentrations remaining in the area of concern or the site are less than an order of magnitude greater than the numerical remediation standard applicable at the time of comparison;

...

ii. The area of concern or site contains contaminants above the numerical remediation standards applicable at the time of comparison and further remediation is required because:

(1) The contaminant concentrations remaining in the area of concern or the site are more than an order of magnitude greater than the numerical remediation standard applicable at the time of comparison;

...

iv. The contaminant concentration remaining in the area of concern or the site is more than order of magnitude greater than the numerical remediation standard applicable at the time of comparison. Any person who is liable for contamination pursuant to N.J.S.A. 58:10-23.11g may be required to conduct further remediation.

**N.J.A.C. 7:26E-6.1 Remedial action requirements**

...

(b) Each remedial action implemented at a contaminated site shall:

...

2. Comply with all applicable remediation standards in effect at the time the remedial action workplan is approved by the Department, provided, however, that if the applicable numeric remediation standards decrease by an order of magnitude or more prior to the issuance of a No Further Action Letter for the area of concern or the site, the person

responsible for conducting the remediation shall be responsible for any additional necessary remediation to achieve the new remediation standards;

...

**N.J.A.C. 7:26E-8.5 Monitoring, maintenance, and biennial certification - requirements for deed notices and declarations of environmental restrictions**

(a) The persons responsible for monitoring the protectiveness of a remedial action that includes a deed notice or declaration of environmental restrictions shall:

...

3. Compare New Jersey laws, remediation standards, and other regulations applicable at the time the engineering or institutional control was established with any relevant subsequently promulgated or modified laws, regulations or remediation standards to determine whether:

i. Any changes in applicable laws, regulations, or remediation standards have occurred; and

ii. Each engineering and/or institutional control comply with the requirements of the new laws and regulations; and

...

(b) The persons responsible for monitoring the protectiveness of a remedial action shall prepare a monitoring report that includes the following information:

...

5. The results of the comparison of applicable laws and regulations pursuant to (a)5 above;

...

8. A description of any changes in applicable laws, regulations or remediation standards and a proposal for all changes in the remedial action to comply with those changes;

9. A description of any additional action taken to ensure the protectiveness of the remedial action; and

10. A conclusion as to whether each remedial action that includes an engineering and/or institutional control remains protective of the public health and safety and the environment.

**7:26E-8.6 Monitoring, maintenance, and biennial certification – specific requirements for ground water classification exception areas**

(a) The persons responsible for monitoring the protectiveness of a remedial action that includes a ground water classification exception area shall:

1. Compare the laws, Ground Water Quality Standards, and other regulations, applicable at the time the Department established the ground water classification exception area, with any relevant subsequently promulgated or modified laws or regulations to determine whether:

- i. Any subsequently promulgated or modified laws or regulations apply to the site;
- ii. Each ground water classification exception area complies with the requirements of the new laws and regulations;

...

(b) The persons responsible for evaluating the protectiveness of a remedial action that includes a ground water classification exception area shall prepare a monitoring report that includes the following:

...

4. The results, in table format, of the comparison of applicable laws and regulations pursuant to (a)1, above;

...

12. A description of any additional action taken to ensure the protectiveness of the remedial action that includes the ground water classification exception area;

...