CHAPTER 105
HAZARDOUS CONDITIONS

DIVISION III
IOWA LAND RECYCLING PROGRAM AND RESPONSE ACTION STANDARDS

567—105.200(455H) Purpose. This division is adopted under the authority of Iowa Code chapter 455H. These rules establish the policy and procedures for the voluntary enrollment of contaminated property in the "land recycling program.". These rules also establish the response action standards which participants must meet in order to qualify for a no further action certificate and the statutory protections and immunities which follow from it. Consistent with the declaration of policy stated in Iowa Code section 455H.104, these rules are intended to achieve the dual objective of addressing the current and future risks associated with contaminated property and thereby enhancing the market conditions which can lead to development of these properties into their highest productive use. These objectives can in part be met through a program which encourages voluntary participation by persons who may have a legal duty to address, in whole or in part, the contamination within an affected area, as well as persons who might not have a legal obligation but who have an interest in development of enrolled sites. These rules attempt to provide a degree of certainty in the response action process as an incentive to participants and as a means of assisting participants in quantifying their financial investment.

105.200(1) It is the objective of these rules to establish a collaborative process between the participant(s) and the department as the most effective means of achieving consensus and resolving disputes on issues which are not or cannot be fully defined and anticipated by rule.

105.200(2) Although participation in this program is voluntary, these rules establish minimum standards which must be met in order to obtain regulatory closure from the department through issuance of a no further action certificate.

105.200(3) Although the scope of the response actions addressed under these rules may not in every case address all known or unknown releases within an affected area, it should be the objective of both the department and the participant(s) to work together and to use all resources available to address all known releases within an affected area in the interest of protecting the public health and safety and the environment as well as achieving regulatory finality.

567—105.201(455H) Applicability. These rules apply only to releases of contaminants which are being addressed at enrolled sites. The department may, however, in its discretion apply the response action requirements of rules 567—105.204(455H) through 105.210(455H) to releases of contaminants at sites which are not enrolled. These rules do not in any way limit the statutory liabilities of participants or nonparticipants except as expressly provided within the context of enrollment and Iowa Code chapter 455H. Consistent with Iowa Code section 455H.505, these rules do not limit the authority of the department or the responsibility of statutorily responsible persons to provide notice of hazardous conditions under 567-Chapter 105, division I or to respond to new releases and undertake emergency response actions under 567-Chapter 105, division II. For sites which are not enrolled, 567- Chapter 105, division II will remain in effect and for enrolled sites 567-Chapter 105, division II shall apply to the extent it is not inconsistent with this division.

567—105.202(455H) Definitions. For the purposes of this division, these definitions and the definitions in 455H.103 shall apply:

"Background standard" means a standard which represents concentrations of contaminants which are naturally occurring or are generally present and not related to a readily identifiable release.

"Carcinogenic health risk" means the incremental risk of a person developing cancer over a lifetime (70 years) as a result of exposure to a hazardous substance, expressed as a probability such as one in a million (10-6). The contaminant level for the probability value is derived from application of certain designated exposure assumptions and a slope factor.

"Contaminant" means any hazardous substance found in the various media of the environment.

"Contaminant of concern" means specific hazardous substances that are identified for evaluation in the risk assessment process. Identification can be based on their historical and current use at the site, detected concentrations in environmental media and their mobility, toxicity, and persistence in the environment.

"Cumulative risk" means a summation of cancer and noncancer risks, determined separately, based on exposure to multiple contaminants from the same medium and exposure of the same individual to contaminants in multiple media.

"Enrolled site" means any property as defined by a legal description, a parcel number, or similar description which sufficiently defines the property in question, which has been or is suspected to be the site of or affected by a release and which has been enrolled pursuant to this division by a participant.

"Environmental protection easement" means an institutional control created under Iowa Code section 455H.206 which is a statutorily authorized restriction on land use.

"Exposure pathway" means the course a contaminant of concern may take from its source area to an exposed organism. Each exposure pathway includes a source or release from a source, a point of exposure, and an exposure route.

"Exposure route" means the manner in which a contaminant of concern comes in contact with an organism (including but not limited to ingestion, inhalation, dermal contact).

"Free product" means a hazardous substance that is present as a nonaqueous phase liquid (e.g., liquid not dissolved in water) or is present as a solid in its original form as a product or waste material.

"Gross contamination" means contamination present at concentrations in an amount sufficient to reasonably expect that institutional or technological controls will not be adequately protective of human health or the environment.

"Group A, B, C, D and E chemicals" means hazardous substances which have been classified based on the weight of evidence of human carcinogenicity. Group A substances are carcinogenic to humans. Group B substances are likely to be carcinogenic to humans. Group C substances have suggestive evidence of human carcinogenicity, but not sufficient evidence to assess human carcinogenic potential. Data are inadequate to assess human carcinogenic potential for Group D substances. Group E substances are not likely to be carcinogenic to humans.

"Hydraulic conductivity" means a measure of the capacity of a porous medium (rock or soil) to transmit water. It is expressed as the volume of water that will flow through a unit length of a unit cross-sectional area of the porous medium in a unit time with a unit head loss.

"Institutional controls" means a nonphysical action which restricts land use to reduce or eliminate exposure to the contaminants of an affected area.

"Lifetime health advisory level (HAL)" means a lifetime health advisory level for a contaminant, established by the United States Environmental Protection Agency (EPA). Health advisories represent the concentration of a single contaminant, based on current toxicological information, in drinking water which is not expected to cause adverse health effects over lifetime exposure.

"Maximum contaminant level (MCL)" means the enforceable maximum contaminant level established by the EPA pursuant to the Safe Drinking Water Act.

"No further action certificate" means the same as no further action letter in Iowa Code section 455H.301. It is a document issued by the department to the participant certifying no further response action is required at an enrolled site for those conditions classified as no further action except the monitoring or the maintenance of institutional or technological controls when required.

"No further action certification" means the department has determined an enrolled site has met all standards applicable for the identified hazardous substances and no further response action is required except the monitoring or the maintenance of institutional or technological controls when required.

"Nonresidential land-use area" means any area that is not a residential land-use area.

"Participant" means any person who applies for the program or enrolls property pursuant to this chapter. A participant is a participant only to the extent the participant complies with the requirements of this chapter.

"Point of compliance" means a location selected within the affected area where the concentration of contaminants of concern must be at or below the target levels established for that point.

"Point of exposure" means the location at which an individual or population may come in contact with a contaminant of concern from the enrolled site.

"Receptor" means an individual or population that is or may be affected by a release from the enrolled site.

"Reference dose," expressed in units of milligrams per day exposure to the contaminant per kilogram of body weight of the exposed individual, means the amount of contaminant that an individual can ingest on a daily basis for a lifetime that is not likely to result in adverse noncancer health effects. A reference dose is protective of the entire human population, including sensitive subpopulations.

"Residential land-use area" means an area zoned for residential use or an area where residential use currently exists, is planned, or is not otherwise precluded. In addition, a residential land-use area includes other areas where frequent, long-term, close contact with soils is likely to occur (e.g., playgrounds, sport fields, gardens, child care facilities).

"Risk evaluation/response action document" means a document based on the site assessment for the enrolled site which includes a risk evaluation, proposed response action, and proposed compliance verification strategy for the enrolled site.

"Site assessment plan" means the optional plan submitted to the department which lays out the rationale and the steps to be followed in the conduct of a site assessment for the enrolled site.

"Site assessment report" means the report of the site assessment which defines the nature and extent of contamination, identifies likely exposure pathways, and allows for characterizing potential and current exposure risks posed by the enrolled site.

"Site-specific standard" means a standard for a specific site which represents a concentration of a contaminant in a media of an affected area at which exposure through a specific pathway is considered unlikely to pose a threat to human health, safety, or the environment given site-specific factors related to contaminant transport and likely exposure.

"Slope factor" means an upper bound estimate that approximates a 95 percent confidence limit of the increased cancer risk from a lifetime exposure to a contaminant. This estimate is expressed in units of the proportion of a population that is affected per milligram per day exposure to the contaminant per kilogram of body weight of the exposed individual.

"Statewide standard" means a standard which represents a concentration of a contaminant in a specific media of an affected area at which normal, unrestricted exposure through a specific

exposure pathway is considered unlikely to pose a threat to human health, safety, or the environment.

"Surface water" means general use segments as provided in 567—paragraph 61.3(1)*"a"* and designated use segments of water bodies as provided in 567—paragraph 61.3(1)*"b"* and 567—subrule 61.3(5).

"Target level" means a concentration of a contaminant of concern required to establish compliance with background, statewide or site-specific standards.

"Target organ" means the biological organ(s) most adversely affected from exposure to the contaminant of concern. A "reference dose" used to calculate noncancer health risk is normally established based on adverse impact to a target organ or organs from exposure to the contaminant of concern.

"Technological control" means a physical action whose main purpose is to reduce or eliminate exposure to the contaminants of an affected area.

567—105.203(455H) Enrollment in the Iowa land recycling program.

105.203(1) *Property eligible for enrollment.* Unless excluded by statute or this rule and subject to eligibility conditions specified in this division, property which has been or is suspected to be the site of or affected by a release of a hazardous substance as defined in Iowa Code section 455H.103 is eligible for enrollment .

105.203(2) *Property Ineligible for enrollment.*

The following sites shall not be enrolled in the Iowa land recycling program:

a. Property with petroleum releases associated with underground storage tanks subject to regulation under Iowa Code chapter 455B, division IV, part 8; and 567—Chapter 135. However, property affected by releases of "regulated substances" from underground storage tanks other than petroleum as defined in rule 567—135.2(455B) subject to regulation under 567—Chapter 135 may be enrolled under this division.) Property enrolled and affected by a release from underground storage tanks of regulated substances other than petroleum will be subject to the response action standards in this division in lieu of those in rules 567—135.8(455B) through 135.12(455B).

b. Property which has been placed or is proposed to be included on the national priorities list established pursuant to the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. Section 9601 et seq. A property will be considered proposed at the time that a public notice of intent to list the property on the national priorities list is published in the Federal Register in accordance with 40 CFR 300.425.

c. An animal feeding operation structure as defined in Iowa Code section 459.102.

d. Properties subject to administrative or judicial enforcement action by the department or the Environmental Protection Agency or subject to an administrative or judicial consent order addressing environmental conditions. These properties may be eligible for enrollment only with the written approval of and under such terms as determined by the enforcing agency.

e. Eligible properties which are or may be affected by or commingled with ineligible releases or conditions will be evaluated on a case-by-case basis to determine their appropriateness for enrollment. Only the eligible property and participant(s) will be afforded the benefits and immunities available under Iowa Code chapter 455H. Any protections provided by issuance of a no further action certificate will be limited by and may be subject to reopening due to future conditions associated with the ineligible release. Considerations for enrollment or exclusion include but are not limited to the following:

(1) The extent to which eligible releases and site conditions can be assessed and response action(s) designed and implemented independent of the ineligible releases and property.

(2) The extent to which the liability and other protections offered by Iowa Code chapter 455H

and the conditions of a no further action certificate can reasonably be defined to apply to the eligible site without consideration of or dependence on future conditions associated with the ineligible release and property.

(3) The extent to which a participant is willing to conduct all response action(s) necessary to address the health, safety and environmental conditions implicated by both eligible and ineligible releases and conditions. The extent to which a nonparticipant responsible for the ineligible release and property can establish an intention and ability to cooperatively address and share costs associated with the commingled conditions and satisfy both the standards in this division and any other regulatory standards applicable to the ineligible release or condition.

105.203(2) *Enrollment policy and procedures.* Prior to enrollment, the participant should have conducted sufficient preliminary site investigation and project planning to be prepared to show that a site is eligible for enrollment and the participant(s) is ready and capable of initiating and completing a response action in accordance with these rules. The participant(s) must submit a completed program application and participation agreement on a form prescribed by the department. The program application shall contain at least the following information.

a. An acknowledgment of accessor control of the site signed by the if that person is a fee titleholder in the affected property; if the participant(s) is not a fee titleholder, then an acknowledgment by the fee titleholder of the affected property. If acknowledgment of access cannot be obtained, the participant must describe efforts to obtain access and reasons why it has been refused.

b. The name, address and other relevant information of each current and anticipated participant(s). The description should include a brief statement of the reasons for each person's participation including, but not limited to, that person's interest in and legal relationship to the property enrolled and the expected role and scope of any participation. Other persons who are not participants but who may have an interest in the project should be identified, such as state and local development agencies, community groups, and financing sources.

c. The participant(s) must demonstrate the presence of hazardous substances at concentrations that warrant response action(s) under the standards in this division. At a minimum, the environmental condition to be addressed must be documented by the submission of a report that includes the following:

(1) Analyses for a contaminant regulated under this division must be performed by a laboratory certified for the analyte(s) and applicable method pursuant to 567—Chapter 83.

(2) A description of the current and historical uses of the property based on a reasonable and diligent inquiry. This must include a description of the following: known sources and probable locations of hazardous substances and probable location of the sources at the property which the participant proposes to address as part of the project; a general description of the historical uses of the property and probable hazardous substances which could reasonably be associated with past land use; and a general description of the surface characteristics of the property and surrounding areas such as current zoning, residential, commercial and industrial uses, and current uses of adjoining properties.

d. Any assessments or other reports relating to contamination at the property in excess of a statewide standard or reportable under 567-Chapter 105, division I which are known to and within the control of the participant shall be submitted. If the participant intends to claim that information constitutes a privileged environmental audit as provided in 1998 Iowa Acts, House File 681, the must notify the department of the claim and resolve the issue of privilege prior to submittal. The shall not submit to the department a report or any part of a report which it claims to be privileged and any information submitted under this paragraph shall be deemed a nonprivileged submittal as provided in section 6, paragraph (1)*"a,"* of the Act. This provision does not relieve the participant of any obligation to notify the department of a hazardous condition as provided in Iowa Code section

455B.386 and rules under 567—Chapter 105, division I.

e. A statement of the project objectives which includes the current use of the property, proposed development activities, and an expected time frame for meeting these objectives. The statement should include a general description of the scope of the proposed environmental condition to be addressed and a proposed schedule for initiation and submittal of site assessment activities pursuant to rule 567—105.208(455H). The statement should describe any foreseeable barriers toward achieving project objectives such as access to property, financing uncertainties, legal actions, allocation of responsibility amongst parties.

f. A list of all known permits and regulatory actions and directives associated with an environmental condition at the site. If any parcel of the proposed enrolled site is subject to any federal regulatory corrective action directives, administrative orders or judicial actions, these must be explained. The participant must submit written proof that the appropriate federal regulatory agency has been notified of the participant's desire to participate in the Iowa land recycling program. Objections, concerns or issues which could lead to disputes regarding dual or conflicting jurisdiction should be resolved prior to application, if possible, and before admission.

g. The department will respond in writing within 60 days of receipt of the enrollment application. The department will notify the participant(s) whether the site has been accepted and an expected time line for assignment of the project to a manager. If the site is not accepted, the department will notify the participant of the reason(s). Upon notification of admission, the property shall be considered enrolled. Once the department has assigned the enrolled site to a project manager, the department will enter into a participation agreement with the participant(s).

105.203(3) *Enrollment fees and oversight costs.* A nonrefundable enrollment fee of $750 must be submitted with the program application. This fee is intended to cover the department's cost of reviewing the program application and a minimum amount of subsequent oversight costs. Subsequent fees in excess of the minimum $750 may be assessed for actual oversight costs incurred by the department as provided in this division. Department oversight activities may include, but are not limited to, review of documents, meetings with the participant(s), site visits, sampling, and laboratory costs related to verification of submitted materials. The total fees for oversight costs shall not exceed $7,500 per enrolled site enrolled prior to July 1, 2018. For sites enrolled on or after July 1, 2018, the fee shall not exceed $25,000 per enrolled site. Fees shall be assessed and collected as follows:

a. Hourly billing rate. Project oversight fees shall be based on an hourly rate to cover wages and overhead costs of personnel employed by the department in the Iowa land recycling program. The department shall calculate and publish on an annual basis an hourly billing rate at which oversight fees shall be calculated.

b. Quarterly payments. The department shall bill the participant(s) on a quarterly basis for additional oversight costs beyond the review of the application incurred by the department. The participant(s) shall pay the department within 30 days after receiving the department's quarterly fee statement. If there is more than one participant, each shall be jointly and severally responsible for payment. The department will provide split billings if provided with an enforceable written contract allocating the fees amongst the participants.

c. Failure to pay required fees. If the participant(s) fails to pay department oversight fees that are required under this subrule, the department shall cease to provide oversight to the participant(s) and terminate enrollment of the site as described in subrule 105.203(7).

105.203(4) *Participation agreement.* All participants shall enter into a participation agreement. This agreement shall be executed at the time the project is assigned to a project manager. At a minimum, the agreement shall establish the following:

a. A requirement that the participant(s) agree and provide necessary documentation to ensure

reasonable access to the affected property by department staff and other authorized representatives of the department.

b. A requirement that the participant(s) reimburse the department for the actual costs assessed as provided in subrule 105.203(3).

c. A requirement that the participant(s) certify that they have the financial means to complete the project based on an initial estimate of completion costs. The department may require modification and amendment of the financial certification at any stage in the project and may require the participant(s) to provide financial documentation as necessary to support the certification.

d. A requirement that the participation agreement include a general description of the scope of the project and the goals to be achieved, a general time frame for submission and review of documents in accordance with this division, allocation of responsibility amongst multiple participants and other appropriate milestones. Either the participant(s) or the department may request a meeting to develop a statement describing the scope, goals, and time frames for the project.

105.203(5) *Prioritization.* Eligible sites will be enrolled in the order in which they are received. The department reserves the right to elevate the priority of a given site if it determines the public health and safety and the environment or environmental conditions in combination with the development objectives consistent with Iowa Code section 455H.104 is significantly greater than those of sites with an earlier enrollment date.

105.203(6) *Withdrawal procedures.* Enrollment and continued participation in the program are voluntary. The participant(s) may withdraw the enrolled site and individual participants may withdraw from further participation in the Iowa land recycling program at any time upon written notice to the department. Any participant who withdraws an enrolled site from further participation in the program shall not be entitled to any refund or credit for the $750 enrollment fee and shall be liable for any oversight costs actually incurred by the department up to the cap of $7,500 per enrolled site enrolled prior to July 1, 2018 and $25,000 per enrolled site enrolled after July 1, 2018. A participant who withdraws a site prior to completion of all response action(s) required by this division and issuance of a no further action certificate in accordance with rule 567—105.211(455H) forfeits all benefits and immunities provided by this division and Iowa Code chapter 455H. Prior to withdrawal, the participant(s) shall submit a plan, which must be approved by the department, for stabilization of conditions at the site or a justification for why further action to stabilize the site is not necessary. Participants shall be required to take such actions as the department determines necessary to stabilize conditions at the site, including, but not limited to, securing or properly abandoning monitoring wells, removing or otherwise properly disposing of all contaminated soil excavations, removing or properly disposing of exposed or exhumed contaminants, filling or properly fencing open excavations, and posting safety notices.

105.203(7) *Termination of enrollment.* Enrollment of the participant(s) may be terminated based on a finding of material noncompliance with department rules and statutory requirements including, but not limited to, the following:

a. Significant failure, after written notice, to comply with schedules for completion and submission of reports and implementation of response action(s) required by these rules or otherwise agreed upon in writing by the department and participants. Written requests for reasonable schedule extensions may be granted upon a showing of extenuating circumstances beyond the control of the participant(s) and the participant(s) agent or contractor.

b. Failure to proceed in a timely manner after written notice in performing the additional response action required due to a failure of technological and institutional controls pursuant to rule 567—105.207(455H).

c. Material misstatement or omission of fact in reports submitted to the department by the participant or agents of the participant.

d. Evidence that the site falls under one of the exclusion categories in subrule 105.203(2).

e. Failure to pay required fees to the department as required in subrule 105.203(3).

105.203(8) *Appeal rights.* The department will notify participant(s) of a denial of enrollment or of an intent to terminate enrollment and provide a statement of reasons. The participant(s) shall have a right to appeal the decision to deny enrollment or to terminate enrollment. Upon timely appeal, contested case procedures shall be initiated pursuant to 561—Chapter 7.

567—105.204(455H) Background standards.

105.204(1) *Purpose.* This rule defines the basis and procedure for establishing background standards in groundwater, soil, surface water, and air. Background standards represent concentrations of contaminants that are naturally occurring or generally present and not related to a readily identifiable release. Background standards provide a baseline for assessing impacts of contaminant releases from within the affected area.

105.204(2) *Determination of background standards.* Background standards shall be based on sampling at appropriate site-specific background locations. Background sampling locations shall be outside the influence of any possible contamination associated with releases occurring on the property in which the enrolled site is located. Sufficient supporting information shall be provided to demonstrate the appropriateness of background sampling locations. Appropriateness for background sampling locations has two aspects which shall be addressed:

a. Background samples shall be collected from a location which represents a true background condition with respect to the enrolled site. A background groundwater sample shall be collected from an upgradient location relative to groundwater movement.

b. Background samples will represent conditions which are comparable to the contaminated media being addressed. In the case of soils, samples from the affected area and the background areas will be comparable in physical, chemical, and biological attributes.

Sampling conducted for the purpose of establishing a background standard shall meet quality criteria specified for the site assessment, rule 567—105.208(455H). The minimum number of samples to be collected from the medium of concern for which a background standard is being established shall be consistent with rule 567—105.210(455H), regarding demonstration of compliance.

567—105.205(455H) Statewide standards.

105.205(1) *Purpose.* This rule defines the basis and procedure for establishing statewide standards for contaminants in groundwater, soil, and surface water. Statewide standards for groundwater and soil represent concentrations of contaminants in these media at which normal exposure via ingestion and dermal contact with soil is considered unlikely to pose a threat to human health. Statewide standards for surface water are based on protection of aquatic life and protection of human health. This rule also describes how air standards are to be addressed.

105.205(2) *Scope.* Statewide standards described herein address what are considered to be the most likely, normal exposure situations. Statewide standards for groundwater address direct exposure via ingestion to individual contaminants in the media of concern only. Statewide standards for soil address direct exposure to individual contaminants via ingestion and dermal contact in the media of concern only. In the event exposure to multiple contaminants may occur or exposure from more than one medium may occur, statewide standards alone may not be protective of human health; therefore, cumulative risk standards must be met in accordance with subrule 105.210(7). In addition, the department may deny the use of the statewide standards prescribed herein and require the use of site-specific standards based on site-specific conditions pursuant to subrule 105.206(10). Examples of exposure concerns not anticipated by the statewide standards include, but

are not limited to:

a. Significant plant uptake of contaminants from soil or groundwater;

b. Contaminants entering drinking water lines from contact with soil or groundwater;

c. Ecological concerns, other than for surface water;

d. Groundwater in a nonprotected groundwater source that is used or likely to be used for drinking water or other use.

105.205(3) *Establishment of risk-based contaminant concentrations.*

a. Risk-based concentration formula. Risk-based contaminant concentrations for soil and groundwater, except lead, shall be computed using the following formula, where appropriate:

(Formula I)

$$C = \frac{RF \times AT \times 365 \text{ days/year}}{Abs \times [(ER_c \times EF_c \times ED_c) \div BW_c + (ER_a \times EF_a \times ED_a) \div BW_a] \times CF}$$

NOTE: When a risk-based concentration is computed for two routes of exposure to the same medium (e.g., soil oral exposure and soil dermal exposure), the composite risk-based concentration equals the multiple of the risk-based concentration for each route of exposure divided by the sum of the risk-based concentration for each route of exposure.

Where: C = Concentration of contaminant (soil: mg/kg, water: mg/l)
RF = Risk factor

For protection from cancer health risks:

RF = TR ÷ SF

Where: TR = Target cancer risk (unitless)
SF = Slope factor [(mg/kg)/day]-1 for a route of exposure; see paragraph *"c"* for source.

For protection from noncancer health risks:

RF = THQ × RfD

Where: THQ = Target hazard quotient (unitless)
RfD = Reference dose (mg/kg)/day for a route of exposure; see paragraph *"c"* for source.

AT = Averaging time (years); time over which exposure is averaged and potential adverse effects may occur

Abs = Absorption factor (unitless); portion of exposed contaminant absorbed by the body

ERc = Exposure rate by a child (soil: mg/day, water: l/day)

EFc = Exposure frequency by a child (days/year)

EDc = Exposure duration by a child (years)

BWc = Body weight of exposed child (kg)

ERa = Exposure rate by an adult (soil: mg/day, water: l/day)

EFa = Exposure frequency by an adult (days/year)

EDa = Exposure duration by an adult (years)

BWa = Body weight of exposed adult (kg)

CF = Conversion factor: 10-6 kg/mg for soils; 1 (unitless) for water

b. Carcinogenic classification of chemicals. The potential carcinogenicity of chemicals will be based on the weight-of-evidence classification system utilized by the U.S. Environmental Protection

Agency (EPA). Risk-based concentrations will be based on cancer health effects for individual chemicals that are classified as Group A or Group B. The risk-based concentration for an individual chemical will be based on noncancer health effects for chemicals that are classified as Group C, Group D or Group E. In the absence of such classification for a chemical, the Group D classification will be assumed. Noncancer risks for a Group A or Group B chemical will be included in the determination of cumulative noncancer risk in accordance with subrule 105.210(7), if a reference dose exists for that chemical. Cancer risk associated with a Group C chemical shall be included in the determination of cumulative cancer risk in accordance with subrule 105.210(7), if a cancer slope factor exists for that chemical.

c. Source of toxicity values. EPA's Integrated Risk Information System (IRIS) shall be the primary source of information on toxicity factors (e.g., oral reference doses and oral slope factors), carcinogenic classification for chemicals, and the target organs. Such information that is not available on IRIS shall be obtained from other sources consistent with current EPA guidelines. The Iowa department of health and human services (IHHS) shall be consulted regarding toxicity values not available on IRIS. Absorption factors for dermal soil exposure shall be based on best available information, which will usually be obtained from EPA guidance documents.

105.205(4) *Statewide standards for groundwater.*

a. Protected groundwater source. Statewide standards for groundwater in a protected groundwater source will be the enforceable Maximum Contaminant Level (MCL) established by the EPA pursuant to the Safe Drinking Water Act DATE, if an MCL exists. If no enforceable MCL exists, the statewide standard for chemicals will be the lifetime health advisory level (HAL) as provided in the 2018 "Drinking Water Regulations and Health Advisories" by the EPA's Office of Water. Interim or provisional HALs can also be used. If no MCL or HAL exists, the statewide standard for a chemical will be calculated using Formula I and input variables for groundwater ingestion in accordance with Table I.

b. Groundwater in a nonprotected groundwater source. The statewide standard for a chemical in groundwater in a nonprotected groundwater source will be five times the statewide standard for the chemical in a protected groundwater source or a risk-based concentration using Formula I with input variables specified in Table I, whichever is larger. The statewide standards for groundwater in a nonprotected groundwater source are based on groundwater ingestion only.

Table I

Input Variables for Risk-Based Statewide Standards for Groundwater from Protected and Nonprotected Groundwater Sources

Parameter	Units	Cancer Group	Protected	Nonprotected
TR	unitless	A, B	5×10^{-6}	1×10^{-4}
SF	$[(mg/kg)/day]^{-1}$	A, B, C	Chem.-spec.	Chem.-spec.*
THQ	unitless	C	0.02	0.1/1*
		D, E	0.2	1
RfD	(mg/kg)/day	C, D, E	Chem.-spec.	Chem.-spec.
AT	years	A - E	70	70
Abs	unitless	A - E	1	1
ER_c	l/day	A - E	1	1
EF_c	days/yr	A - E	0	0
ED_c	years	A - E	6	6
BW_c	kg	A - E	15	15
ER_a	l/day	A - E	2	2
EF_a	days/yr	A - E	365	365
ED_a	years	A - E	70	70
BW_a	kg	A - E	70	70
CF	unitless	A - E	1	1

The risk-based concentration using Formula I for Cancer Group C chemicals that have an SF value established per paragraph 105.205(3)"c"* will be the larger of a value based on the risk factor for protection from noncancer health risks with a THQ = 0.1 or the risk factor for protection from cancer health risks. Risk-based concentrations using Formula I for Cancer Group C chemicals that do not have an SF value established per paragraph 105.205(3)*"c"* will be a value based on the risk factor for protection from noncancer health risks with a THQ = 1.

105.205(5) *Statewide standards for soil.* Statewide standards for chemicals in soil, except lead, will be calculated using Formula I based on incidental ingestion of soil and dust and dermal contact with soil with input variables in accordance with Table II. The statewide standard for lead in soil shall be 400 mg/kg.

Table II
Input Variables for Statewide Soil Standards

Route of Exposure				
Parameter	Units	Cancer Group	Oral	Dermal
TR	unitless	A, B	5×10^{-6}	5×10^{-6}
SF	$[(mg/kg)/day]^{-1}$	A, B, C*	Chem.-spec.	Chem.-spec.
THQ	unitless	C*	0.1/1	0.1/1
		D, E	1	1
RfD	(mg/kg)/day	C, D, E	Chem.-spec.	Chem.-spec.
AT	years	A, B	70	70
		C, D, E	6	6
Abs	unitless	A - E	1	Chem.-spec.
ER_c	mg/day	A - E	200	560**
EF_c	days/yr	A - E	350	350
ED_c	years	A - E	6	6
BW_c	kg	A - E	15	15
ER_a	mg/day	A - E	100	400**
EF_a	days/yr	A - E	350	350
ED_a	years	A, B	24	24
		C, D, E	0	0
BW_a	kg	A - E	70	70
CF	kg/mg	A - E	10^{-6}	10^{-6}

The risk-based concentration using Formula I for Cancer Group C chemicals that have an SF value established per paragraph 105.205(3)"c"* will be the larger of a value based on the risk factor for protection from noncancer health risks with a THQ = 0.1 or the risk factor for protection from cancer health risks. Risk-based concentrations using Formula I for Cancer Group C chemicals that do not have an SF value established per paragraph 105.205(3)*"c"* will be a value based on the risk factor for protection from noncancer health risks with a THQ = 1.

**Dermal exposure rate is based on 2,800 cm^2 of exposed skin on a child with 0.2 mg/cm^2 of soil adhering to the child's skin and 5,700 cm^2 of exposed skin on an adult with 0.07 mg/cm^2 of soil adhering to the adult's skin per each dermal exposure event. A dermal exposure event is assumed to be one event per day of exposure.

105.205(6) *Statewide standards for surface water.* Water quality standards pursuant to 567—Chapter 61 shall be considered statewide standards for surface water. If a promulgated water quality standard does not exist for a contaminant of concern, the department may establish an appropriate

standard in a manner consistent with 567—Chapter 61.

105.205(7) *Statewide standards for air.* Ambient air quality standards pursuant to 567—Chapter 28 constitute statewide standards for air. Air emission sources must meet air quality emission standards as set forth in 567—Chapters 20 through 33 inclusively, as applicable. Any relevant air quality standard that is subsequently promulgated by statute or rule shall become a statewide standard for air upon the effective date of adoption by the state. In the absence of applicable, adopted standards, site-specific air standards must be met, in accordance with subrule 105.206(9), when air quality issues are addressed at a site.

105.205(8) *Point of exposure for statewide standards.* The point of exposure associated with the use of only statewide standards in the determination of compliance will be assumed to be anywhere and everywhere, except for surface water. The point of exposure associated with the use of statewide standards for surface water will be assumed to be the point of groundwater or other site runoff immediately before it discharges to the surface water body.

105.205(9) *Practical quantification limits.* In no case will the statewide standard be less than the practical quantification limit, as determined by the department.

105.205(10) *Maintenance of statewide standards.* The toxicity values, absorption factors for dermal exposure to soils, and promulgated standards that are a basis for statewide standards are subject to periodic revision due to actions not governed under this rule. The department in conjunction with the IHHS will maintain a current list of toxicity values, absorption factors for dermal exposure to soils, target organs for cumulative noncarcinogenic health risks, promulgated standards, and the resultant statewide standards that will be readily available to the public. This guidance document will reference all the sources of the information. In the absence of a dermal slope factor or a dermal reference dose for a chemical, the oral slope factor or oral reference dose will be used with adjustments made to account for differences in oral and dermal absorption rates in accordance with current EPA guidance. Statewide standards for individual sites will be locked-in at the beginning of the site assessment process pursuant to rule 567—105.208(455H). If a statewide standard does not exist for a chemical, it will be the department's responsibility to establish a statewide standard, pursuant to subrules 105.205(4) and 105.205(5), for groundwater and soil, and to add the newly established statewide standard to the comprehensive list of statewide standards in the guidance document maintained by the department.

567—105.206(455H) Site-specific standards.

105.206(1) *Purpose.* As opposed to statewide standards, site-specific standards are derived by applying exposure and risk assumptions applicable to the conditions at a particular site. Like statewide standards, site-specific standards must always be shown to be protective of public health and safety and the environment. Statewide standards may be used in combination with site-specific standards to address different exposure pathways. Site-specific standards may be required to address exposure pathways which the department determines must be evaluated to be protective of human health, safety and the environment and for which statewide standards have not been established under rule 567—105.205(455H). Site-specific standards may involve development of target levels for contaminants of concern based on site-specific exposure assumptions for use in lieu of background or statewide standards. Site-specific standards may also include consideration of the actual or potential location where exposure to contaminants occurs or may occur, the likelihood of an exposure occurring, and the overall magnitude and extent of contamination. Site-specific standards may involve use of site-specific target levels for contaminants of concern alone or in conjunction with other site-specific criteria, such as the location where the standard is applied.

105.206(2) *General provisions.*

a. This rule establishes a minimum protocol that must be met at all enrolled sites which have not established compliance by application of background or statewide standards. Groundwater ingestion and soil ingestion pathway standards under this rule must be evaluated. Surface water and

air quality standards under subrules 105.206(8) and 105.206(9) must be met whenever exposure concerns are evident and the participant or the department determines these pathways may present an unacceptable risk for current or future exposures. This rule is not intended to preclude the department or the participant from addressing other exposure pathways, and the department expressly reserves the right to require evaluation of other exposure pathways and compliance with site-specific standards developed for them, such as dermal contact, ingestion of vegetables containing contaminants from soil or irrigation water, migration of contaminants from groundwater or soil into water distribution lines or into air in a confined space, migration of contaminants from soil to groundwater, and migration of contaminants in a nonprotected groundwater source to a protected groundwater source. Participants must establish compliance with standards applicable to all exposure pathways required by the department under this rule in order to qualify for no further action classification under rule 567—105.211(455H) unless granted a waiver as provided in Iowa Code section 455H.205.

b. Site-specific standards are subject to the approval of the department. Assurances in the form of technological or institutional controls in accordance with rule 567—105.207(455H) will be required, as needed, to ensure continued protectiveness of site-specific standards.

c. Subrules 105.206(3) through 105.206(11) provide options for site-specific standards. The participant may select any of these options, or combinations thereof, for use as site-specific standards.

105.206(3) *Site-specific groundwater point of exposure.* A site-specific groundwater standard may be an appropriate target level applied at groundwater points of exposure that are limited by technological or institutional controls.

a. A point of exposure for groundwater is a location within the affected area where a well exists or could be placed (potential point of exposure). Where technological or institutional controls are determined to effectively restrict the placement of groundwater wells, the points of exposure apply outside the area of restriction. A sufficient number of points of exposure may be established for determining compliance such that compliance with appropriate target levels at these points will ensure compliance at all points of exposure. Normally a compliance point of exposure will be a location at the boundary of the area restricted by an institutional control where a groundwater well could be installed that would have the highest contaminant concentration. Generally more than one compliance point of exposure must be established due to uncertainties, such as spatial and temporal variabilities in groundwater flow and contaminant occurrence.

b. Target levels. The point of exposure target level for drinking water wells is the statewide standard applicable to groundwater ingestion or an alternative site-specific target level approved under subrule 105.206(10) or subrule 105.206(11). The point of exposure target level for non-drinking water wells is the statewide standard applicable to nonprotected groundwater or an alternative site-specific target level approved under subrule 105.206(10) or subrule 105.206(11). The point of exposure target level for nonused groundwater meeting the conditions in subrule 105.206(5) is the statewide standard for a nonprotected groundwater source.

c. Nonprotected groundwater sources. A nonprotected groundwater source which is affecting or likely to affect an existing drinking water well shall be required to meet the same site-specific standards, including point of exposure target level(s), as applied to a protected groundwater source.

d. Unless conditions can be demonstrated to be stable, predictive techniques in accordance with subrule 105.209(4) must be used to determine the future effects of groundwater contamination on existing drinking and non-drinking water wells and to determine the area predicted to exceed the point of exposure target level(s) where wells could be installed. When using predictive techniques, determining the location(s) where the applicable point of exposure target level is expected to be exceeded may involve comparison of the appropriate numerical standard to the predicted

contaminant concentration at a passive monitoring well at the groundwater point of exposure. Alternatively, predictive techniques using site-specific models pursuant to paragraph 105.209(4)*"b"* may involve simulation of pumping at a well located at the point of exposure, in which case the pumping rate used in the simulation shall be the rate that is reasonably possible for the area that yields water with the highest contaminant concentration. In absence of site-specific justification for doing otherwise, long-term pumping will be assumed to be at a rate of 100 gallons per day; the sustainable yield, if less than 100 gallons per day; or a reasonable, higher rate, if such a rate results in higher contaminant concentration.

e. Institutional controls. For a protected groundwater source or a nonprotected groundwater source as described in paragraph 102.206(3)"b," institutional controls must be shown to effectively prohibit the installation of wells for the period of time in which contaminant concentrations might otherwise be expected to result in an exceedance of the appropriate target levels. For a nonprotected groundwater not described in paragraph 102.206(3)*"b,"* a less stringent standard of effectiveness as well as the type of future well installation to be restricted may be utilized for those areas of potential concern. Unless there is a history of usage of what might otherwise be considered nonprotected groundwater or there is uncertainty as to the uniformity in the hydraulic characteristics of the nonprotected groundwater source, notice to the authority responsible for permitting private wells under 567—Chapters 39 and 49 may be adequate, especially if combined with a municipal or county ordinance prohibiting installation of private wells based on the availability of a public water supply.

105.206(4) *Site-specific groundwater point of compliance.* A site-specific standard may be established for a site-specific groundwater point of compliance that is different from a compliance point of exposure. A site-specific groundwater point of compliance must be used in conjunction with all groundwater compliance points of exposure pursuant to subrule 105.206(3) to provide an alternative monitoring location. Target levels for contaminants of concern at a site-specific groundwater point of compliance must be established using predictive techniques as specified in subrule 105.209(4). A target level established for a groundwater point of compliance must ensure that the appropriate target level at the groundwater compliance points of exposure will be achieved. A groundwater point of compliance shall be located on the contaminant migration path from the contaminant source to the point of exposure to the maximum extent practicable.

105.206(5) *Nonused groundwater in a protected water source.* Statewide standards for groundwater in a nonprotected groundwater source, pursuant to paragraph 105.205(4)*"b,"* may be used as target levels for contaminants in an otherwise protected groundwater source when groundwater in the affected area is not used and is not likely to be used in the future in accordance with the following. It must be demonstrated to the satisfaction of the department that contaminants from the enrolled site do not currently, and likely will not in the future, have an impact on any existing water supply well. Any detection, or predicted detection above the practical quantification limit, of a chemical that can be attributed to a release from the enrolled site will be considered to constitute an impact. In addition, it must be demonstrated to the satisfaction of the department that the impacted or potentially impacted aquifer is not a locally significant water resource. Factors that will go into this determination may include, but are not limited to:

- Existence of a nonimpacted public water supply in the potentially affected area;
- General availability of other water resources in the vicinity;
- Plans for development of public water supplies in the vicinity;
- Potential for use of the impacted aquifer as a water supply (e.g., yield, natural water quality); and
- Identification of the aquifer(s) commonly used for water supply in the vicinity.

A local ordinance prohibiting installation of private drinking water wells or notification to the local water utility and water permitting authority, or both, may constitute acceptable institutional

controls for site-specific standards under this subrule.

The target levels that may be used in accordance with this subrule are based solely on groundwater ingestion. Compliance with this site-specific standard will not guarantee that contaminants in groundwater may not cause unacceptable exposure via other pathways (e.g., groundwater to air in a confined space, groundwater to surface water, or groundwater to a water distribution line).

105.206(6) *Site-specific soil standards based on land use and soil depth.* Site-specific soil standards based on land use and soil depth in conjunction with institutional controls may be used. Predetermined site-specific soil exposures based on land use and soil depth are provided in the following paragraphs. Lists of resulting site-specific soil standards for individual contaminants for these land-use and soil-depth categories will be maintained by the department in a guidance document and made readily available to the public. Use of these site-specific soil standards must be supported by appropriate institutional controls. Site-specific soil standards based on land use and soil depth, as described herein, address ingestion of and dermal contact with soil. Compliance with these standards will not guarantee that contaminants in soils may not cause unacceptable exposure via other pathways (e.g., ecological exposure, soil to groundwater, subsurface movement of vapors from soil to indoor air). In addition, the risk factors that form the bases for site-specific soil standards for individual contaminants, with the exception of some Group C chemicals, are the same as acceptable cumulative risk factors allowed for exposure to multiple contaminants in the same medium and multiple media. Therefore, compliance with site-specific soil standards for individual contaminants may not result in compliance with cumulative risk requirements pursuant to rule 567—105.210(455H).

a. Deep soil in a residential land-use area. Site-specific soil standards for deep soils equaling ten times the statewide standard for soils, except for lead, may be used. The site-specific standard for lead in deep soil in a residential land-use area shall be calculated using of EPA's Exposure Model for Assessing Risk Associated with Adult Exposures to Lead in Soil (USEPA, 1996). Soils at a depth of ten feet and greater will normally be classified as deep soils. The department may deny the use of a deep soil standard associated with a residential land use or require a modification to the standard due to site-specific considerations including topography, development potential, and actual development plans. The use of a site-specific standard for deep soil in a residential land-use area shall be supported by an institutional control that permanently records the existence of contaminants above statewide standards in deep soils and restricts excavation resulting in deep soils being placed on the surface.

b. Nonresidential land use. The nonresidential land-use designation will be applicable to areas that are not classified as residential. Site-specific soil standards, except for lead, for nonresidential areas may be based on Formula I using the risk and exposure factors shown in Table III. A value of 1,100 mg/kg may be used as a site-specific soil standard for lead in soils less than 2 feet deep in a nonresidential land-use area. In lieu of this default site-specific lead standard, a site-specific standard for lead in soil less than 2 feet deep may be calculated using the most current version of EPA's Exposure Model for Assessing Risk Associated with Adult Exposures to Lead in Soil. The site-specific standard for lead in soils greater than 2 feet deep in a nonresidential land-use area shall be calculated using the most current version of EPA's Exposure Model for Assessing Risk Associated with Adult Exposures to Lead in Soil. The use of a nonresidential land-use classification must be supported by an environmental protection easement that prevents a change in land use to residential.

671

Table III

Input Variables for Site-Specific Soil Standards for Individual Contaminants for Nonresidential Area Land-Use Designation

Parameter	Units	Cancer Group	Soil Depth (ft.)	
			<2	>2
TR	unitless	A, B	1×10^{-4}	1×10^{-4}
SF (oral)	$[(mg/kg)/day]^{-1}$	A, B, C*	Chem.-spec.	Chem.-spec.
SF (dermal)	$[(mg/kg)/day]^{-1}$	A, B, C*	Chem.-spec.	Chem.-spec.
THQ	unitless	C*	0.1/1	0.1/1
		D, E	1	1
RfD (oral)	(mg/kg)/day	C, D, E	Chem.-spec.	Chem.-spec.
RfD (dermal)	(mg/kg)/day	C, D, E	Chem.-spec.	Chem.-spec.
AT	years	A, B	70	70
		C, D, E	1	1
Abs (oral)	unitless	A - E	1	1
Abs (dermal)	unitless	A - E	Chem.-spec.	Chem.-spec.
ER_c	mg/day	A - E	0	0
EF_c	days/yr	A - E	0	0
ED_c	years	A - E	0	0
BW_c	kg	A - E	15	15
ER_a (oral)	mg/day	A, B	100	330
		C, D, E	330	330
ER_a (dermal)	mg/day	A, B	660**	990**
		C, D, E	660**	990**
EF_a	days/yr	A, B	225	200
		C, D, E	200	200
ED_a	years	A, B	25	1
		C, D, E	1	1
BW_a	kg	A - E	70	70
CF	kg/mg	A - E	10^{-6}	10^{-6}

672

673

NOTE: Oral and dermal factors are the same unless otherwise noted.

The risk-based concentration using Formula I for Cancer Group C chemicals that have an SF value established per paragraph 105.205(3)"c"* will be the larger of a value based on the risk factor for protection from noncancer health risks with a THQ = 0.1 or the risk factor for protection from cancer health risks. Risk-based concentrations using Formula I for Cancer Group C chemicals that do not have an SF value established per paragraph 105.205(3)*"c"* will be a value based on the risk factor for protection from noncancer health risks with a THQ = 1.

**Dermal exposure rate is based on 3,300 cm^2 of exposed skin on an adult with 0.2 mg/cm^2 of shallow soil adhering to the skin and 0.3 mg/cm^2 of deep soil adhering to the skin per each dermal exposure event. A dermal exposure event is assumed to be one event per day of exposure.

105.206(7) *Site-specific cumulative risk for residential exposures to soil.* A cumulative risk standard may be used as a site-specific standard for soil in lieu of statewide standards that are provided in subrule 105.205(5) for individual chemicals and soil. Cumulative risk will be determined using the toxicity values and exposure factors (i.e., the input variables less TR and THQ) from Table II in subrule 105.205(5). Criteria for compliance with the cumulative risk standard are specified in subrule 105.210(7). No institutional control will be required with the use of this site-specific standard.

105.206(8) *Site-specific surface water standards.* The department will establish site-specific surface water standards at the request of the participant. The participant shall provide the department with information necessary to make this determination upon request from the department. Site-specific surface water standards will be generally equivalent to effluent limitations under a National Pollutant Discharge Elimination System (NPDES) permit pursuant to 567—Chapter 62. Mixing zones and allocation of contaminant loads in a surface water body will be considerations in attainment of in-stream water quality standards. If the site-specific surface water quality standards are met, best practical control technology currently available will not be imposed.

105.206(9) *Site-specific air standards.* If there are air quality concerns at a site, they will normally be addressed with site-specific standards until such time as ambient air quality or source-specific standards are adopted for hazardous air pollutants.

a. Explosivity. In no case shall contaminants from the enrolled site cause an explosivity level in a confined space of greater than 10 percent of the lower explosivity limit.

b. Background. In addition to the establishment of a background standard pursuant to rule 567—105.204(455H), a site-specific air standard may be set at twice the typical background level based on published information for a comparable setting, if approved by the department.

c. Health risk. Site-specific standards for air in a confined space shall be risk-based using the chemical-specific toxicity values of inhalation unit risk (UR) and inhalation reference concentration (RfC) determined in accordance with paragraph 105.205(3)*"c."* Formulas II and III shall be used to calculate risk-based, site-specific air standards based on carcinogenic and noncarcinogenic effects, respectively, where C is the risk-based contaminant concentration in air. If a value for both RfC and UR exists for a compound, the risk-based site-specific standard will be the smaller of C resulting from Formulas II and III.

(Formula II)

$$C = AF \times TR \div UR$$

(Formula III)

$$C = AF \times RfC$$

The UR and RfC toxicity values are based on a continuous exposure of 20 cubic meters per day by a 70 kg adult. The adjustment factor (AF) in Formulas II and III may be used to adjust for site-specific

exposure conditions. A target cancer risk (TR) of 10-4 shall be used unless another value is approved by the department.

d. Institutional or technological controls. Institutional or technological controls may be used to prevent future exposure to contaminants in air in confined spaces and will be required to prevent residential use of the affected area when a nonresidential air standard is used.

105.206(10) *Site-specific standards based on site-specific factors.* Numerical site-specific standards (i.e., target levels) for groundwater or soil may be established using site-specific exposure factors in Formula I. Site-specific pumping rates greater than specified in paragraph 105.206(3)*"d"* herein may be used when approved by the department. Site-specific exposure factors must be approved by the department. For the department to approve any such site-specific factor there must be well documented rationale for doing so and appropriate institutional or technological controls must be provided.

105.206(11) *Site-specific standards or approaches not anticipated by this rule.* Nothing in this rule precludes the use of site-specific standards derived in some way not anticipated by this rule, provided that the rationale is adequately presented and the approach is both approved by the department and provides a level of protection comparable to standards set forth under this rule.

567—105.207(455H) Technological and Institutional controls.

105.207(1) *Technological controls.* The purpose of a technological control is to effectively sever a pathway by use of technologies such that an applicable receptor could not be exposed to hazardous substances above an applicable target risk level. Subject to limitations in this division, technological controls are an acceptable response action either alone or in combination with other remediation systems and institutional controls. The purpose of technological controls may be to control plume migration through use of containment technologies, barriers, or other methods, as an interim or permanent response action or to permanently sever a pathway to a receptor. Technological controls may also be appropriate to treat or control contamination at the point of exposure. Any technological control proposed as a permanent response action option without meeting the reduction in contaminant concentrations objectives must establish that the pathway to a receptor will be permanently severed or controlled. The effectiveness of a technological control must be monitored under a department-approved plan. The department may require reasonable proof of financial assurance when necessary to ensure that a technological control remain effective.

105.207(2) *Institutional controls.* The purpose of an institutional control is to restrict access to or use of an affected area such that an existing or future receptor could not be exposed to hazardous substances addressed by the controls for as long as the target level is exceeded at applicable points of exposure and compliance.

105.207(3) *Institutional and technological controls.* Single or multiple institutional controls may be used alone or in combination and may also be employed with technological controls and response action to effectively achieve, maintain and enforce an approved level of risk reduction and risk management. The following enumeration of types of institutional and technological controls is not a finding that each is per se an effective control. The effectiveness of any institutional or technological control or combination of controls must be evaluated on a case-by-case basis and in accordance with specified conditions in this division. Institutional and technological controls include:

a. A state or federal law or regulation which can be shown to effectively achieve, maintain and enforce the required land-use restrictions and controls.

b. An ordinance of any political subdivision of the state which can be shown to effectively achieve, maintain and enforce the required land-use restrictions and controls.

c. A contractual obligation recorded and executed in a manner satisfying Iowa Code chapter 558. Recorded notices and affidavits, including a no further action certificate as provided in rule 567—105.211(455H), which do not create rights or obligations or restrict land use but serve to put current and future property owners on notice of present or future conditions within the affected

area.

d. A control which the participant demonstrates to the department reduces or manages the risk from a release through the period necessary to comply with the applicable standards, including but not limited to, informational devices such as public notices, informational registries, notices to regulatory authorities and continuing site activities such as periodic inspections, equipment repair and maintenance, and soil and groundwater monitoring.

e. An environmental covenant established in accordance with Iowa Code chapter 455I and Iowa Code section 455H.206.

105.207(4) *No further action certificates.* Any no further action certificate shall contain a specific reference to any applicable institutional and technological control and shall meet the requirements in rule 567—105.211(455H). The reference must identify the location of any recorded instrument, contractual agreement or other documents applicable to the control, provide a brief description of the terms of the control and, where appropriate, site diagrams.

105.207(5) *Enforcement of institutional and technological controls.* Institutional and technological controls which have been incorporated into a no further action certificate pursuant to rule 567—105.210(455H), or have been approved prior to issuance of a no further action certificate, may be enforced in Iowa district court by the department, a political subdivision of this state, the participant or any successor in interest to the participant as provided in Iowa Code subsection 455H.206(4). Enforcement of the terms of an environmental covenant shall be in accordance with Iowa Code chapter 455I, and the terms of the environmental covenant.

105.207(6) *Failure of an institutional and technological control(s).* The effectiveness of institutional and technological controls may be jeopardized for several reasons including situations where the technological controls are no longer effective in achieving their technical objectives, the validity of technological or institutional control is challenged due to a pending or final administrative or judicial action or legislative action changing its regulatory effect (e.g., change in an ordinance), or persons fail to comply with the terms of the institutional or technological control. The effect of the failure of a technological or institutional control to achieve its intended purpose is to remove the no further action classification and put all interested parties in the same position had the no further action classification not been made. When the department has reason to believe a technological or institutional control is jeopardized or determines that the control is no longer effective, the following policy and procedure shall apply:

a. The department shall make reasonable efforts to provide notice of the failure or noncompliance to the participant(s), protected parties, persons having legal standing to enforce the terms of the controls, other persons who may be legally responsible for contamination at the site and persons legally obligated to comply with the terms of the controls. The notice shall inform these parties of the consequences of failure of the controls and provide the opportunity for one or more of them to correct the deficiency by taking further response action or undertaking enforcement action to obtain compliance with the terms of the controls.

b. The participant(s) and other persons legally responsible for contamination at the site shall have primary responsibility to correct deficiencies or seek enforcement of the terms of controls, if they wish to maintain a no further action classification and any attendant statutory protections. The department may in its discretion seek enforcement of controls where persons fail to comply with the terms when it determines there is a strong likelihood of success, other participant(s) or legally responsible persons are unable or unwilling to undertake enforcement, and utilization of the controls remains consistent with these rules and site conditions currently in effect at the site. However, the department is not obligated to seek enforcement of the terms of any technological or institutional controls nor does the election not to undertake enforcement constitute a defense to further action by responsible parties or a basis for challenging the rescission of the no further action

classification.

c. The department may also elect to require statutorily responsible parties to correct the deficiency as an alternative to rescinding the no further action classification.

d. Failure of a participant to timely undertake additional response action may result in termination of enrollment and loss of benefits under these rules and Iowa Code chapter 455H. Any person found to have intentionally violated an environmental protection easement or other institutional or technological control, whether included in a no further action certificate or as part of an approved response action, may lose any of the benefits under these rules or Iowa Code chapter 455H.

105.207(7) *Modification and termination of institutional and technological controls.* A participant or successor in interest to a participant, or an owner of property subject to an institutional or technological control, may seek approval from the department for the removal, discontinuance, modification or termination of an institutional or technological control. The person must demonstrate that the control in its present form is no longer required to ensure compliance with applicable standards. The person seeking revision must undertake sufficient risk assessment and provide sufficient assessment data to establish that the applicable compliance standards can be met based on the proposed modification. The department may also determine based on a revised assessment that the applicable controls are no longer effective to meet compliance standards and may require other response action. The department shall issue an amendment to any previously issued no further action certificate specifying the approved modification of the institutional or technological controls. Modification and termination of an environmental covenant shall be consistent with these rules and shall conform with Iowa Code chapter 455I.

567—105.208(455H) Site assessment.

105.208(1) *Purpose.* The purpose of the site assessment is to define the nature and extent of contamination, along with identifying likely exposure pathways, with the aim of characterizing potential, current and future risks and making an informed decision concerning an appropriate response in the context of probable future land uses at the site and in the surrounding area. Assessment is to be conducted with the recognition that contaminant fate and transport may alter the current areal extent and depth of contamination. It is recognized that the scope of such an assessment may be appropriately varied dependent upon interrelated factors including the nature and severity of the contamination, the complexity of specific details of the site and its setting, and the nature of the chosen response, if known.

105.208(2) *Site assessment plan.* The participant is encouraged, but not required, to submit for department review a site assessment plan, prior to proceeding with the site assessment. Participants choosing to initiate site assessment without department review and approval of a work plan shall notify the department in writing of their intentions. Likewise, participants choosing to proceed to the risk evaluation/response action phase in accordance with rule 567—105.209(455H) without seeking review of the site assessment report shall give prior notice to the department of their intentions. The notice shall include a schedule for implementation and completion, a description of the area to be assessed and the scope of the proposed assessment to be undertaken, any planned construction activities in the affected area and a proposed date for submission of the site assessment report for department review. If the notice includes an intention to go directly to the risk evaluation/response action phase, it shall also include a general description of the site assessment results, a schedule for submission of the risk evaluation/response action document and the reasons for not requesting department review and approval of the site assessment report.

The plan is intended to lay out the rationale to be followed in the conduct of the site assessment. The purpose for this optional stage is to provide an opportunity for the participant and the department to reach a consensus regarding the appropriate scope of the site assessment. The development of a consensus should serve to diminish the likelihood that the department will find the

final site assessment report to be deficient and, for the benefit of the participant, to avoid the expenditures and time associated with the collection of what may ultimately prove to be unnecessary data.

In order to accomplish this, it is suggested that the plan should address relevant, known characteristics related to the site and its history as well as plans for addressing pertinent details spelled out in the subsequent sections on the site assessment and the site assessment report. Departmental review of the site assessment plan may result in suggestions regarding perceived shortcomings or proposed activities which are deemed to be unnecessary.

The participant may find it desirable to conduct some preliminary investigation in order to develop a site assessment plan.

105.208(3) *Site assessment details.* In order to meet the stated purpose of the site assessment, it will be necessary to characterize numerous attributes related to the enrolled site and its setting. The following objectives are intended to provide a framework in which to accomplish this purpose. It is recognized that these objectives may exceed the appropriate scope of some site assessments and that there may be situations in which it may be necessary to define additional objectives. If a site assessment plan is submitted, any such deviation shall be addressed in a site assessment plan. In general, an acceptable site assessment should address the following items.

a. Identify and address the medium or media of concern associated with the contamination situation for which the site is enrolled. The regulatory classification or jurisdiction of contaminants shall be indicated if applicable and, if known, whether the compound is regulated under the Resource Conservation and Recovery Act (RCRA), Toxic Substances Control Act (TSCA), or Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).

b. Characterize the nature, extent, and degree of contamination in both horizontal and vertical dimensions. This should involve appropriate sample numbers and locations within the contaminated area and beyond the area contaminated in excess of the background or statewide standard. Analyses shall be conducted for the contaminants of concern, breakdown products, and other contaminants likely to be present at significant levels. The department may also require analyses for additional contaminants which are not the focus of enrollment in the program, but which may be of special concern. Special concerns might include waste handling or treatment problems posed by the additional contaminants, or unacceptable risks remaining unaddressed within the affected area, due to the presence of the additional contaminants. In the case of groundwater, attention should also be given to the possibility of contaminant accumulation in strata overlying confining layers and to the possible presence of non-aqueous phase liquids (NAPL). In the case of groundwater, more than one round of sampling shall be incorporated, appropriately separated in time. In the case of soils, particular attention should be given to characterizing shallow soil contamination, from zero to six inches in depth.

c. Characterize the nature of the source of contamination or propose a conceptual model explaining the presence of the contamination of concern.

d. Characterize local contamination maxima or hot spots for the purposes of evaluation against relevant standards and to identify handling or treatment concerns that they may pose.

e. Characterize the stratigraphy. This should be done to a depth extending to the first significant confining layer below the deepest contamination. Descriptions should rely primarily on results gathered in the site assessment, but relevant reference materials or geologic logs from other sources may be incorporated as a supplement.

f. Characterize the hydrologic properties of the site and its vicinity to a distance appropriate to the fate, transport and exposure concerns associated with the site. This characterization should consider both horizontal and vertical components of groundwater movement as well as other influences on groundwater hydrology such as pumping wells, injection wells, surface water bodies,

effects of seasonal or precipitation-driven variability, and possible aquifer interconnections, including those related to existing or abandoned wells. Water level measurements, related to a common datum, screening of appropriate depth intervals, and determination of hydraulic conductivity will generally be considered as necessary.

g. Characterize physical and chemical properties of the site and its environs associated with contaminant fate and transport, e.g., percent organic matter, redox potential, soil bulk density, and transmissivity.

h. Characterize topographic and cultural features of the site and its immediate vicinity. Cultural features may include, but not be limited to, buildings, basements, paved areas, roadways, utilities, storage tanks and associated piping, piles, impoundments, wells, and waste disposal systems.

i. Evaluate concerns related to whether the contamination situation is dynamic or stable; if dynamic, address fate and transport and breakdown products appropriately.

j. Identify and characterize receptor or exposure concerns. This most clearly involves concerns for drinking water and exposures to contaminated soils, as suggested by the statewide standards, but additional concerns should be identified and addressed by the participant or the department, as the situation warrants, e.g., vapors to basements, threats to water supply lines, threats to surface waters, or environmental threats.

k. Characterize current and probable future uses of the site and its surroundings. If probable future uses differ significantly from current uses, then characterize them separately and conduct the assessment in a fashion which addresses concerns arising from the possible change in use.

l. Evaluate the potential for contaminants to migrate from one medium to another. The following subparagraphs prescribe requirements for assessing potential migration of contamination from one medium to another. Requirements in the following subparagraphs may be waived if it can be demonstrated in accordance with procedures established in 567—Chapter 135 or American Society for Testing and Materials (ASTM) standards E1903-19 related to the Phase II environmental site assessment process that migration of contamination from one medium to another will not cause a violation of the applicable standard in the receiving medium. The assessment activities prescribed in the following subparagraphs are intended to determine if significant migration of contamination from one medium to another has occurred. If evidence of significant migration of contamination from one medium to another (i.e., generally a contaminant concentration in the receiving medium in excess of the statewide standard) is discovered, full-scale characterization of the receiving medium may be required.

(1) The water from any pond or lake on the site or within 300 feet of the site shall be sampled and analyzed for the contaminants of concern, if it is reasonably possible that contaminants from the site could impact the pond or lake. Any surface stream that runs through the site or within 300 feet of the site shall be sampled at a location downstream of any potential impact from the site and analyzed for the contaminants of concern. Depending on the characteristics of the contaminants (e.g., solubility), associated sampling and analysis of sediments may be required.

(2) Groundwater at the location most likely to be impacted by each known substantial area of soil contamination shall be sampled and analyzed for the contaminants of concern. If the area of soil contamination exceeds 10,000 square feet, additional groundwater samples may be required.

(3) Soil vapors in each area that is most likely to be impacted by known groundwater or soil contamination shall be sampled and analyzed for the contaminants of concern. If the area of soil or groundwater contamination exceeds 10,000 square feet, additional soil vapor samples may be required. If vapors may be impacting an existing enclosed space, a soil vapor sample shall be collected from a location that is most likely to have vapor contamination adjacent to the enclosed space.

If the potential for the existence of problematic concentrations of the vapors in the enclosed space cannot be dismissed based on soil vapor sampling, sampling and analysis of vapors inside the

enclosed space may be conducted to determine whether or not a problem exists. Appropriate measures for distinguishing between contaminant vapors originating from within the enclosed space versus those from the external sources that are under investigation may be made with the approval of the department.

Ambient air sampling may be required if a very large area or extremely high concentrations of highly volatile contaminants exist in shallow soil or evidence of vapor contamination exists, such as odors or a high vapor reading on a vapor-screening instrument.

(4) If a water line exists within the zone of known contamination of soil, groundwater or soil vapor and the potential for significant diffusion of contaminants into the water line cannot otherwise be dismissed, a sample from the water line shall be collected at the nearest location where any impact may exist and that sample shall be analyzed for the contaminants of concern. All such samples should be collected at times following minimum movement within the water line (e.g., early morning following a weekend).

105.208(4) *Site assessment report.* The site assessment report shall include the presentation of all information gathered relative to the foregoing description of the site assessment, arranged in appropriate sections of the report. It shall include a summary of preliminary information on which the site assessment is based, including but not limited to background and site history. The report shall discuss the sampling strategy and methods used in the assessment. The department encourages the use of innovative or screening techniques to expedite investigations and to control costs, provided that such techniques are approved by the department before implementation and are supported through verification by accepted scientific practices. The report shall also include a description of the quality assurance/quality control (QA/QC) protocols followed during the investigation. QA/QC protocols shall be consistent with accepted scientific practices, including those set forth in appropriate EPA or ASTM guidance or otherwise approved by the department.

The presentation shall be organized so as to facilitate the assimilation of information by the reader. Maps to be presented, as appropriate, might include maps illustrating the location of the site in a larger geographical context; maps showing cultural features associated with the site and its environs; maps illustrating the contamination extent and concentration in three dimensions; maps illustrating the site hydrology in three dimensions; and maps illustrating receptors, potential receptors, and relevant pathways of exposure. Cross-sectional diagrams shall be included to illustrate stratigraphy, geological boring information, and hydrologic and contaminant factors with depth. Tables and graphs shall be designed for the purpose of summarizing data in a meaningful fashion, including information about successive rounds of sampling. Appendices shall include well logs, copies of laboratory analytical reports, and raw data used to calculate parameters presented elsewhere in the report. Appended material shall be labeled in a fashion permitting the cross-referencing of appended materials and the body of the report.

105.208(5) *Approval of site assessment report.* Unless notice has already been given prior to initiation of the site assessment, participants choosing to proceed to the risk evaluation/response action phase without department review and approval of the site assessment report must notify the department in advance as provided in subrule 105.208(2).

105.208(6) *Public notification.* Before or upon completion of the site assessment, the participant shall provide the department with the names and addresses of the owners and occupants of all property adjacent to the site enrolled in the Iowa land recycling program and any additional properties where contaminants from the enrolled site have migrated or are likely to migrate in the future. The department shall notify by direct mailing all such property owners and occupants, the city or county in which the property is located, and officials of any potentially impacted public water supply of the site's enrollment in the Iowa land recycling program and of the scope of work described in the participation agreement. The department shall give the notified parties the

opportunity to obtain updates regarding the status of activities relating to the site that is enrolled in the Iowa land recycling program. The department may also require the participant of a site enrolled in the Iowa land recycling program to publish public notice in a local newspaper if the department determines that widespread interest in the site exists or is likely to exist. The department may provide additional opportunities for public participation if, after consultation with the participant, the department determines such opportunities are warranted.

567—105.209(455H) Risk evaluation/response action.

105.209(1) *Purpose.* The purpose of risk evaluation/response action is to utilize information from the site assessment as a basis for:

a. Determining whether current exposures result in excessive risks, based on evaluation against appropriate background, statewide, or site-specific standards.

b. Determining whether future exposures may result in excessive risks, based on evaluation against appropriate background, statewide, or site-specific standards. This will likely include:

(1) Evaluation of potential changes in usage, e.g., installation of a new well, change in land use, or other activities, which result in unacceptable, potential exposures not evaluated as current exposures, and

(2) Evaluation of exposure concerns related to the movement of contamination such that potential exposures might arise which are not considered under current exposure assumptions, e.g., groundwater plume migration creating a potential for future contamination of existing wells or creating newly contaminated areas in which new well installation may result in unacceptable exposures.

c. Proposing an appropriate and acceptable response action or strategy to address the identified, unacceptable exposures or potential exposures.

d. Establishing the test criteria to be applied under rule 567—105.210(455H) for determining final compliance with the selected standard. In some cases this may consist of proving that standards are currently met; in other cases it may result in an assessment of whether the response action succeeds in bringing about compliance with a selected standard.

The risk evaluation/response action is intended only for application to the specific contaminants and situations for which the site is enrolled.

105.209(2) *Risk evaluation.* The risk evaluation/response action document shall identify all locations or areas, and associated exposure pathways, where exposure currently exceeds a statewide standard or where a statewide standard may be exceeded in the future, due to either a change in exposure-related usage or contaminant migration. Current and future exposure pathways shall be evaluated and presented separately. This evaluation shall not be limited to exposure pathways for which the department has formulated risk-based values in rule 567—105.205(455H) or rule 567—105.206(455H), but should include any pathway related to the situation for which the site is enrolled, for which a no further action certificate is sought, or for which an unacceptable risk may now or in the future exist, including but not limited to, high concentrations of volatile compounds in proximity to a confined space, high concentrations of solvents in proximity to a water distribution line, or environmental concerns unrelated to human health.

In a case where a background standard is to be applied and there is no violation of a statewide standard, it will be necessary to identify only locations or areas where the background standard is exceeded.

In some instances it is anticipated that the risk evaluation may be appropriately abbreviated from the preceding description, based on the specific details of the contamination and the proposed response action.

105.209(3) *Establishing cleanup standards.* The risk evaluation/response action document shall identify the cleanup standards to be applied in accordance with rule 567—105.204(455H), rule 567—

105.205(455H), or rule 567—105.206(455H), outlining respectively the background, statewide, or site-specific standards. These standards may be applied in any combination to address specific components of the contamination problem for which the site is enrolled. If cleanup standards other than those specifically formulated under the statewide standard (rule 567—105.205(455H)) are to be applied, then the rationale behind the determination of such standards shall be justified, in the document, to the department's satisfaction.

105.209(4) *The use of models.* The department recognizes that the use of numerical models may be necessary in order to evaluate potential future exposures or that models may be used to develop target levels.

a. Standard models. Standard models may be used to predict future contaminant concentrations at potential points of exposure to contaminants or at other locations used for determining compliance when such models are appropriate, as determined by the department. Applicable Tier 2 models approved for use in accordance with 567—Chapter 135 for underground storage tanks (USTs) and applicable Tier 2 models provided in ASTM standards are acceptable standard models. Models which provide a two-dimensional representation of groundwater flow will not be considered to be appropriate when significant three-dimensional components to groundwater flow are anticipated. Default values for input parameters for ASTM and UST Tier 2 models, as provided in applicable ASTM standards and approved for use in accordance with 567—Chapter 135, may be utilized without approval by the department. The department shall maintain a guidance document which includes a list of other chemical-specific default values for all chemicals having statewide standards. The use of other, site-specific input parameters is addressed under site-specific modeling in paragraph 105.209(4)*"b"* below.

b. Site-specific models. Site-specific models may be used to predict future contaminant concentrations at potential points of exposure to contaminants or at other locations used for determining compliance when such models are appropriate, as determined by the department. Site-specific models may include standard models with site-specific input parameters or models utilizing more sophisticated analytical techniques. A site-specific groundwater model shall have proven reliability and be able to simulate, as needed:

- A fixed contaminant source,
- Groundwater and contaminant flow in three dimensions,
- Groundwater and contaminant flow through as many distinct geologic layers as necessary for the site in question,
- Effects of pumping,
- Effects of groundwater recharge and discharge,
- Impacts of hydrologic boundaries,
- Contaminant advection, dispersion and chemical reactions, as appropriate for the site in question, and
- Other site-specific variables as appropriate.

Default values for input parameters approved for standard models will be approved for use in site-specific models. Otherwise, input parameters used in site-specific models are subject to the department's approval.

105.209(5) *Response action.* The risk evaluation/response action document shall include a proposal for a response action or strategy to achieve and maintain compliance with the selected standard(s). This may consist of activities designed to remove or treat contaminants, prevention of exposure to unacceptable levels of contamination through technological controls, institutional controls or monitoring, or it may consist of a combination thereof. If the response action involves the use of a standard which is less stringent than the statewide standard, it will generally be necessary to implement institutional controls to prevent the type of exposure on which the statewide standard is

based. It is the intent of the department to permit the participant to identify and carry out those options by which this may be accomplished, insofar as the department deems the selected options to be reasonable, protective of the public health and safety and the environment, and consistent with provisions of the rule.

105.209(6) *Free product and gross contamination.* The response action or strategy for an enrolled site shall take into account a stated policy of the Safe Drinking Water Act DATE to encourage environmental cleanup. To this end, the department requires that contaminants present as free product and gross contamination shall not be addressed through the implementation of institutional or technological controls. For purposes of this rule, gross contamination will be considered to be contamination present at concentrations in excess of a standard by an amount sufficient to reasonably expect that institutional or technological controls will not be adequately protective of the public health and safety and the environment.

The department recognizes that treatment or removal of free product or gross contamination may not, in some cases, be feasible. In such cases the department may grant a waiver to this portion of the rule. It will be the responsibility of the participant to make a sufficient case that such a waiver is warranted.

105.209(7) *Compliance verification strategy.* The risk evaluation/response action document shall outline a strategy for determining whether the relevant standards are met by the site and will continue to be met in the future. In some cases this may consist of sampling and statistical tests to verify that the standard has already been met, while in other cases the sampling and statistics may be used to demonstrate that a response action has achieved its stated goals and the site is now in compliance with standards. Some response strategies may also call for longer term monitoring. In this latter case, standard-based values shall be identified which, if exceeded, would indicate a failure of the response action and necessitate the development and implementation of a new response action. The terms under which monitoring may cease should also be proposed. The proposed strategy shall be consistent with rule 567—105.210(455H), dealing with demonstration of compliance, and shall indicate the standard to be applied and the point of compliance at which it is to be applied, consistent with rules 567—105.204(455H), 105.205(455H), and 105.206(455H).

105.209(8) *Risk evaluation/response action document submission.* A risk evaluation/response action document shall be submitted for review and approval by the department. When considered in conjunction with the site assessment report, these documents shall present a complete picture of the site from its characterization, through the evaluation of risk, to the development of a strategy to address the situation. An effort shall be made to ensure that the reviewer, or other interested parties, can gain an understanding of the existing situation and proposed actions. The risk evaluation/response action document shall include a summary of findings regarding present risks and potential future risks; a pathway-specific identification of the standards to be applied, including the supporting rationale, if appropriate; a discussion of the proposed response actions, including remedial actions to be taken and institutional or technological controls to be implemented; and a discussion of the proposed verification strategy. Any modeling used for purposes of assessing future risk or establishing site-specific standards shall be presented in sufficient detail to permit evaluation of the results by the department.

105.209(9) *Department review and approval.* It is recommended that the risk evaluation/response action be submitted for review and approval prior to proceeding with implementation of the response action. The final, department-approved document shall be the basis for assessing subsequent activities at the site. Parties choosing to proceed with response actions without prior review and approval by the department proceed at their own risk and may not assume the response action implemented will result in a no further action certificate.

Parties choosing to implement a response action without prior review and approval by the department shall submit to the department a proposed risk evaluation/response action document

accompanied by an explanation of the reason(s) for proceeding without prior approval. Documentation shall also include a schedule for implementation, a description of construction or other activities to be undertaken, and date for submission of the final report demonstrating compliance, as described in rule 567—105.210(455H).

The department shall provide opportunity to comment on proposed response actions to any party that is potentially impacted by off-site migration of contaminants for which notification is required in accordance with subrule 105.208(6). The department shall consider reasonable comments from potentially impacted parties in determining whether to approve or disapprove a proposed response action or site closure.

567—105.210(455H) Demonstration of compliance.

105.210(1) *Purpose.* The purpose of the demonstration of compliance is to provide a mechanism by which to verify that:

a. Appropriate and acceptable standards are complied with and that compliance can be reasonably expected to continue in the future;

b. Any and all remedial measures proposed under rule 567—105.209(455H) have achieved their purpose; and

c. Appropriate institutional and technological controls, or monitoring mechanisms, have been successfully implemented.

In some cases, the demonstration of compliance may mark the final step, taken by the participant prior to the issuance of a no further action certificate by the department. In other cases, it may mark the transition to the longer term closure activities associated with the site, such as monitoring, maintenance of technological controls, and continuing enforcement of institutional controls. In this latter case, demonstration of compliance activities may or may not result in the issuance of a no further action certificate, depending on the approach proposed in the response action. In some cases it may be necessary to successfully complete a monitoring program, or to fulfill other agreed-upon obligations prior to the issuance of the no further action certificate.

In all cases, sampling of environmental media shall comply with QA/QC requirements addressed in rule 567--105.208.

105.210(2) *General requirements for demonstrating compliance with soil standards.*

a. For the standard being applied, the demonstration of compliance shall be at the point of compliance or point of exposure as set forth in rule 567—105.204(455H), rule 567—105.205(455H), or rule 567—105.206(455H) relating to background standards, statewide standards, and site-specific standards, and described in a site-specific context pursuant to subrule 105.209(7), relating to risk evaluation/response action.

b. Minimum sample numbers for the demonstration of compliance with the background standard for soils pursuant to paragraph 105.210(4)*"b"* or with the statewide standard when applying subparagraph 105.210(5)*"a"*(1) shall be based on the volume of soil to which the selected standard is being applied as follows:

(1) For volumes less than or equal to 125 cubic yards, a minimum of 8 samples.

(2) For volumes greater than 125 cubic yards, but less than or equal to 3,000 cubic yards, a minimum of 12 samples.

(3) For each additional volume of less than or equal to 3,000 cubic yards, a minimum of 12 additional samples.

(4) Additional samples may be required based on site-specific conditions.

c. When applying the 95 percent upper confidence limit (EPA guidance) to demonstrate compliance with the statewide standard for soils pursuant to subparagraph 105.210(5)*"a"*(2) or a site-specific standard for soils pursuant to subrule 105.210(6), the minimum sample number shall be

as specified in that guidance.

d. Sample locations for demonstration of compliance shall be selected in a random fashion to be representative, both horizontally and vertically, of the volume of soil being evaluated for compliance.

e. Sampling for the purpose of demonstrating compliance shall be conducted after the completion of site assessment activities and after the implementation of applicable remedial measures.

105.210(3) *General requirements for demonstrating compliance with groundwater standards.*

a. For the standard being applied, the demonstration of compliance shall be at the point of compliance or point of exposure as set forth in rule 567—105.204(455H), rule 567—105.205(455H), or rule 567—105.206(455H), relating to background standards, statewide standards, and site-specific standards, and described in a site-specific context pursuant to subrule 105.209(7), relating to risk evaluation/response action.

b. Monitoring wells installed for the purpose of demonstrating compliance shall be of sufficient number and appropriate location to evaluate all hydrologic strata of concern, based on site-specific considerations, as identified pursuant to subrule 105.209(7), relating to risk evaluation/response action.

c. For statistical methods under subparagraph 105.210(5)*"b"*(1), compliance with the statewide groundwater standard shall be based on eight consecutive quarters of groundwater data.

As an alternative, the department may accept four consecutive quarterly sampling events or less with prior written approval from the department under the following conditions:

(1) There is adequate spatial monitoring of the plume upgradient which indicates a decreasing concentration trend toward the downgradient property boundary.

(2) Parameters affecting the fate and transport of regulated substances within the plume have been fully evaluated.

(3) Concentrations of regulated substances in the plume at the point of compliance monitoring wells along the downgradient property boundary are all less than or equal to the groundwater standard or the limit relating to the PQL, whichever is higher, in all samples collected during the quarters of monitoring.

(4) One of the following is met:

1. The age of the plume is sufficiently well known to permit a judgment to be made regarding its stability.

2. The remediation includes source removal or containment actions which would reduce chemical flux into the plume.

d. When applying the 95 percent upper confidence limit, according to EPA guidance, to demonstrate compliance with the statewide standard for groundwater pursuant to subparagraph 105.210(5)*"b"*(2) or a site-specific standard for groundwater pursuant to subrule 105.210(6), the minimum sample number shall be as specified in that guidance.

e. Sampling for the purposes of demonstrating compliance shall be conducted after the completion of site assessment activities and after the implementation of applicable remedial measures.

105.210(4) *Demonstration of compliance with a background standard.*

a. To apply a background standard the participant shall demonstrate to the department, in writing, that the apparent background contamination at the site is due to widespread or naturally occurring contamination and shall obtain the department's approval to apply this subrule. Data collected for the purpose of determining the applicable background standard is subject to department approval, interpretation, and manipulation, if necessary for the purpose of establishing a meaningful background standard.

b. For soil, the minimum sample number to determine the background standard shall be 10,

unless a lesser number is approved by the department, and the number of samples from the affected area shall be based on volume as described in paragraph 105.210(2)*"b."* No sample collected from the affected area may exceed the sum of the background arithmetic mean and three times the sample standard deviation, as calculated based on the background sampling.

c. For groundwater, a minimum of 12 locations shall be sampled in the background reference area, unless a lesser number is approved by the department, and an equal number shall be collected from the affected area. In areas involving more than one hydrologic strata, more samples may be required. Sampling shall be conducted concurrently in the background reference area and the affected area. No sample collected from the affected area may exceed the sum of the background arithmetic mean and three times the sample standard deviation, as calculated based on the background sampling.

105.210(5) *Demonstration of compliance with the statewide standard.* The following requirements shall be met in order to demonstrate compliance with the statewide standard. Testing shall be performed individually for each contaminant being addressed and for which a no further action certificate is sought.

a. To demonstrate compliance with the statewide standard for soils in each affected area, in addition to subparagraph 105.210(5)"*a*"(1) or subparagraph 105.210(5)"*a*"(2), all other applicable requirements of this rule shall be met.

(1) Seventy-five percent of all soil samples, collected during a single event, shall be less than or equal to the statewide standard, with no individual sample exceeding 10 times the statewide standard.

(2) In accordance with EPA-approved methods, the 95 percent upper confidence limit of the arithmetic mean of soil sample values from the affected area shall be at or below the statewide standard.

b. To demonstrate compliance with the statewide standard for groundwater in each compliance monitoring well, in addition to subparagraph 105.210(5)"*a*"(1) or subparagraph 105.210(5)"*a*"(2), all other applicable requirements of this rule shall be met.

(1) Seventy-five percent of all samples collected in each compliance monitoring well over time shall be less than or equal to the statewide standard, with no individual sample exceeding 10 times the statewide standard.

(2) In accordance with EPA-approved methods, the 95 percent upper confidence limit of the arithmetic mean of samples collected from a compliance well over time shall be at or below the statewide standard.

105.210(6) *Demonstration of compliance with a site-specific standard.* To demonstrate compliance with a site-specific standard, the participant shall use the tests identified in subparagraphs 105.210(5)*"a"*(2) and 105.210(5)*"b"*(2), except that the 95 percent upper confidence limit of the arithmetic mean for samples from the medium of concern shall be at or below the site-specific standard.

105.210(7) *Compliance with cumulative risk.* In addition to or, for soil only, in lieu of compliance with standards for individual contaminants as prescribed above, cumulative risk criteria must be attained. Cumulative carcinogenic health risks shall not exceed 1 in 10,000. Noncarcinogenic health risks affecting the same target organ shall not exceed a cumulative hazard quotient of 1. Cumulative risk criteria are applicable to multiple contaminants in the same medium and multiple media in which exposure is likely to occur to the same individual. Cumulative risks shall be based on the same exposure assumptions that are used for determining the selected standard.

Risks associated with background levels of contaminants shall not be included in the cumulative risk determination. Background levels of contaminants shall be determined in accordance with subrule 105.210(4) or, if approved by the department, by the use of generally available information

on background levels of contaminants.

In situations where the risk associated with exposure to a contaminant at a concentration equal to the selected standard is greater than the acceptable cumulative risk, the cumulative risk may be calculated assuming the risk associated with exposure to the contaminant at a concentration equal to the selected standard is equal to the acceptable cumulative risk criterion. The department will provide a guidance document for calculating cumulative risk and make it readily available to the public.

105.210(8) *Final report.* A final report shall be submitted to the department which documents the accomplishment of all provisions set forth in the risk evaluation/response action document. This shall include, as applicable to the specific situation, discussions related to verification of compliance with selected standards; successful completion of remedial actions; implementation of necessary institutional or technological controls; and initiation of any required monitoring strategy. Sufficient details shall be included to permit the department to verify that the terms proposed in the response action have been met with regard to the statistical determination of compliance with standards.

105.210(9) *Department review and approval.* The final report is subject to review and approval by the department. Following review, the department will either approve the report or make a written response indicating the reason(s) why the report is unacceptable. Acceptance of the report may result in the issuance of a no further action certificate or it may mark a transition to the long-term closure activities associated with the site, as proposed in the response action. A decision that the report is unacceptable may be based upon an insufficiency of the report or it may be based on a judgment that the terms of the response action have not been met.

In cases where a participant has elected to proceed through this program without department interaction and without submitting site assessment pursuant to rule 105.208(455H), or risk evaluation/response action documents pursuant to rule 567—105.209(455H), the final report shall contain the substantive information related to those rules in addition to information required under this rule. The intent is to create a document for departmental review and approval which clearly sets forth, in substance, the same process which would have been developed had the participant engaged in a stepwise approach including interaction with the department during the process.

567—105.211(455H) No further action classification.

105.211(1) *Eligibility.* An enrolled site shall be eligible to obtain a no further action classification when the department determines the participant has met all compliance standards of this division applicable to the affected area, and the hazardous substances identified and evaluated such that no further response action is required other than maintenance of institutional or technological controls or certain specified continuing site activities. Upon request of a participant or a protected party, and compliance with applicable standards, the department will issue a no further action certificate to each protected party requesting it.

A no further action classification may be conditioned upon the continued maintenance and effectiveness of any applicable institutional or technological control in accordance with rule 567—105.207(455H).

105.211(2) *No further action certificate.* A no further action certificate shall be in a form recordable in the county real estate records as provided in Iowa Code chapter 558 and consistent with the model forms developed by the department. The no further action certificate may be recorded as provided by law.

105.211(3) *No further action certificates conditioned on institutional and technological controls.* A no further action certificate conditioned upon the continuing effectiveness and maintenance of institutional and technological controls or other continuing requirements must be recorded with the consent of the fee titleholder for each parcel of affected property subject to the controls and for parcels of property for which prevention of exposure is dependent upon the continuing effectiveness and maintenance of the controls. If a participant is not able to record the no further action certificate

on a parcel within the affected area due to objections of the fee titleholder or other legal restraints, this alone shall not be a basis for denying or rescinding the no further action classification or the certificate or the legal protections attendant to the no further action classification. Any modification or termination of institutional and technological controls shall be noted in an amended no further action certificate and shall be recorded as to any property subject to an earlier recorded certificate or institutional control. If a no further action certificate is required to be recorded, the no further action classification is not effective until the document is recorded with the county recorder.

105.211(4) *Public notification.* The department shall prepare a public notice prior to approval of any no further action classification which is conditioned upon use of institutional or technological control(s). The public notice will describe the results of the risk assessment conducted in the affected area, any proposed or completed response action, the vertical and horizontal extent and concentrations of existing soil and groundwater contamination in the affected area, and the actual and potential pathways of exposure the controls are intended to address. The notice will describe the purpose of the institutional and technological control(s) being proposed and the predicted period of coverage. The notice will provide the opportunity for members of the public to review department files, make written comments and request a public hearing. The department may schedule a public hearing on the basis of requests from the public and when it determines the particular remedial options proposed for a site warrant public consideration, for example, when issues of whether and to what concentrations gross contamination should be allowed to remain within the affected area given the relative effectiveness of institutional controls and other community concerns and development plans.

a. The notice will be served by certified mail on all property owners that the actual or modeled data indicates are or may be affected by the present or future conditions addressed by the control. The notice will be published in a newspaper of general circulation most likely to reach persons in the immediate locality.

b. If the controls are intended to restrict surface or subsurface future land use, the notice shall be sent to each local regulatory body having jurisdiction and control over or a direct interest in regulation of these activities. These may include, but are not limited to, municipal or county zoning boards, municipal building authorities, public utilities, and economic development agencies. If the controls are intended to restrict groundwater use, the notice shall be sent to the county or city board of health responsible for private well permitting.

c. Failure to provide notice to an interested party shall not constitute a basis for invalidating a subsequently approved no further action certificate.

105.211(5) *Scope of liability protection.* Upon issuance of the no further action certificate by the department, the liability protection provisions contained in Iowa Code chapter 455H, subchapter 3, apply. The scope of the no further action classification and the scope of liability protection extend only to that area of affected property as defined by actual and modeled contaminant data and the specific environmental condition for which a regulatory standard has been met and approved by a no further action classification. The scope of protection corresponds to the scope of the site assessment conducted by the participant, the exposure pathways actually evaluated by the assessment report and reviewed by the department, and the hazardous substances identified in that assessment for which compliance with a department-approved standard has been achieved. Liability protection does not apply to releases, sources of contamination, hazardous substances or other environmental conditions not expressly addressed in the participant's site assessment, response action or specifically referenced in the no further action certificate.

The no further action classification and certificate shall be void if the department demonstrates by clear, satisfactory, and convincing evidence that any approval under this division was obtained by

fraud or material misrepresentation, knowing failure to disclose material information, or false certification to the department.

105.211(6) *Reopener and reclassification conditions.*

a. The department shall have grounds to reopen and rescind a no further action certificate and consider reclassification of the affected area if specified conditions of the no further action certificate are not maintained, or if institutional or technological controls fail to meet their intended purpose or are determined to be ineffective and unenforceable. If the conditions upon which the no further action certificate was issued cannot be corrected or reinstated, the department may rescind the certificate. The effect of termination is to put all parties in the same position as if the no further action certificate had not been issued.

b. If a no further action certificate is issued without conditions or technological and institutional controls, and conditions should arise which might require further corrective action, the department may require further response action by a participant or protected party only as provided in Iowa Code section 455H.301. The department may require further response action against a statutorily responsible party who is not a participant or a protected party. If the participant was a person having control over a hazardous substance, as defined in Iowa Code section 455B.381, at the time of the release, a no further action certificate may require further response action to protect against an imminent and substantial threat to public health and safety and the environment. A protected party who was a person having control over a hazardous substance, as defined above, may be required by the department to conduct a further response action, where appropriate, to protect against an imminent and substantial threat to public health and safety and the environment.

These rules are intended to implement Iowa Code chapter 455H.