



**Missouri Department of Natural Resources**  
Division of Environmental Quality  
February 2013

**State of Missouri**

**Regulatory Impact Report for  
Proposed Rule Amendments  
Risk-Based Corrective Action for Petroleum Storage Tank Sites**

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## 1.0 BASIC RULE INFORMATION

**Program/Division:** Division of Environmental Quality, Hazardous Waste Program

**Rules Numbers/Titles:**

10 CSR 26-2.062 Assessing the Site at Closure or Changes in Service (amendment)

10 CSR 26-2.078 Investigations for Soil and Groundwater Cleanup (amendment)

10 CSR 26-2.082 Corrective Action Plan (amendment)

**Type of rule:** Rule Amendments

**Submitted by:** Hazardous Waste Management Commission

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## 2.0 INTRODUCTION AND BACKGROUND

This section describes the amended rules being published and the types of environmental conditions that apply.

### 2.1 Background

Under state and federal authority, the Missouri Department of Natural Resources (Department), Division of Environmental Quality (DEQ), Hazardous Waste Program (HWP) oversees response, characterization, risk assessment, and corrective action activities conducted by storage tank owners<sup>1</sup> and operators<sup>2</sup> at petroleum storage tank sites in Missouri. A petroleum storage tank site is a property or properties at which a release of petroleum from a regulated petroleum storage tank<sup>3</sup> has occurred. At the time this report was published, the HWP was overseeing actions at approximately 1,100 petroleum storage tank sites.

Other Department programs and divisions support the HWP's oversight of activities at petroleum storage tank sites, including the Water Protection Program, Solid Waste Management Program, Environmental Services Program, and the Division of Geology and Land Survey. In addition, the Missouri Department of Health and Senior Services periodically assists the HWP with the development and review of risk assessments for petroleum storage tank sites.

The process tank owners and operators are to follow to close an underground storage tank and the process they are to follow to address a release from an underground storage tank system are explained generally in existing rules and specifically in a guidance document titled *Missouri Risk-Based Corrective Action Process for Petroleum Storage Tanks*. For releases from underground

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<sup>1</sup> As defined at 319.100(9)

<sup>2</sup> As defined at 319.100(8)

<sup>3</sup> Inclusive of both underground and above ground tanks as per 319.100(13).

storage tank systems, the risk-based corrective action process is used to identify, assess, and manage the specific risks contaminants associated with a release pose to human health and the environment.

The Department originally published the *Missouri Risk-Based Corrective Action Process for Petroleum Storage Tanks* guidance in February 2004. In March 2005, the Department amended the 2004 guidance by publication of the following supplemental guidance documents:

- *Notice of Modifications to the Process and Interim Guidance Pertaining to Application of the New Soil Type Dependent Tier 1 Risk-Based Target Levels*, March 8, 2005
- *Soil Type Determination Guidelines*, March 18, 2005
- *Table 3-1 Default Target Levels*, March 3, 2005
- *Table 4-1 Soil Concentration Levels to Determine the Need for Groundwater Evaluation During Tank Closure*, April 2005
- *Tables 7-1(a) through 7-12(c) Tier 1 Risk-Based Target Levels*, February 2005; and
- *Soil Gas Sampling Protocol*, April 21, 2005.

The Department incorporated the 2004 guidance document, as amended by the supplemental guidance documents listed above (and hereinafter referred to as the “2004 amended guidance”), into rule by reference effective December 30, 2011. Specifically, a reference to the 2004 amended guidance was added to 10 CSR 26-2.062, 2.078, and 2.082. This was the first time the Department referred to this risk-based corrective action process in rule. The reference allowed tank owners and operators to use the 2004 amended guidance as a written procedure for tank closure, site investigations following discovery of a tank release, and the preparation of a Corrective Action Plan until December 31, 2012.

The rulemaking that is the subject of this report will amend 10 CSR 26-2.062, 2.078, and 2.082 to incorporate by reference a version of the guidance updated in 2013 (hereinafter the “2013 updated guidance”). Additionally, the references to and incorporation of the 2004 amended guidance currently found in 10 CSR 26-2.078 and 2.082 will be retained, but the December 31, 2012 deadline date associated with the guidance will be removed. With respect to 10 CSR 26-2.062, the reference to the 2004 amended guidance and the deadline date will be removed. The proposed rulemaking will also specify when tank owners and operators may continue to apply the 2004 amended guidance to a tank release site and when owners and operators must apply the 2013 updated guidance. The proposed rules allow owners and operators to continue to apply the 2004 amended guidance if the owner or operator received Department approval of a work plan for their site prior to the effective date of the proposed rules and provided the owner or operator implements the approved work plan within one year of Department approval of the plan. In all other cases, the owner or operator must apply the 2013 updated guidance.

For tank closures and changes in service, the proposed rules will specify that owners and operators shall use the 2013 updated guidance as a written procedure unless the Department provides written approval to use a different procedure (which may include use of the 2004 amended guidance).

## **2.2 History of Risk-Based Corrective Action in Missouri**

In 1995, the General Assembly passed House Bill 251, which directed the Department to use risk-based corrective standards to remediate petroleum underground storage tank sites. In 1999, the General Assembly passed Senate Bill 334, which directed the Clean Water Commission, or CWC, to develop a process to determine if risk-based remediation of groundwater was appropriate for any particular site. Both these directives aimed to facilitate risk-based decision making at sites overseen by the Department. In 2004, S.B. 901 transferred rulemaking authority for release reporting and risk-based remediation requirements for underground storage tanks from the CWC to the Hazardous Waste Management Commission, or HWMC. In 2008, S.B. 907 gave the HWMC a deadline of February 13, 2009, for proposing risk-based corrective action rules. The Department met that deadline, but the proposed rule package was ultimately withdrawn by the HWMC.

From 1995 until 2004, the Department implemented a type of risk-based corrective action process at petroleum storage tank sites that employed the use of a one-page site evaluation scoring matrix to determine applicable cleanup levels for a given site. Unlike the risk-based process embodied in the 2004 amended guidance and in the 2013 updated guidance, the scoring matrix process did not require a detailed evaluation of specific exposure pathways or result in a detailed evaluation of site-specific risks, nor did it allow for the development of target levels based on specific exposure pathways. In these ways it differs significantly from the process in the 2004 and 2013 guidance documents.

The *Missouri Risk-Based Corrective Action Process for Petroleum Storage Tanks* guidance was developed by the Department and a stakeholder group over a period of several years. The guidance was completed and put into use in January 2004. In March 2005, the 2004 guidance was amended to incorporate soil-type specific tier one risk-based target levels and guidance related to the identification of soil types and application of the new risk-based target levels. In 2012 and 2013, the Department revised the 2004 amended guidance to eliminate the soil type specific risk-based target levels and associated guidance, and instead included a single set of updated risk-based target levels to clarify certain aspects of the risk-based process, and to streamline the guidance by eliminating unnecessary text. Refer to Section 3.0 of this report for details regarding the Department's update of the 2004 amended guidance.

## **3.0 REPORT ON PEER-REVIEWED SCIENTIFIC DATA USED TO COMMENCE THE RULEMAKING PROCESS**

The principal purposes of the proposed rulemaking are to amend rule references to the 2004 amended guidance and to add references to the 2013 updated guidance. The scope of the guidance update was limited to the following specific issues:

- Modification of data collection provisions to improve the representativeness of geotechnical data used in developing Tier 2 site-specific target levels
- Change the criteria for determining whether to analyze for ethylene dibromide and ethylene dichloride and require use of a more sensitive laboratory method when analyzing groundwater for EDB
- Clarifying requirements regarding reasonably anticipated future land use determinations
- Clearly explaining requirements regarding site maps
- Require more thorough documentation to support conclusions regarding the likelihood that subsurface water zones will or will not be used for drinking water
- Listing the specific photographs required to document tank closure activities

- Specifically allowing soil gas sampling at Tier 1 or Tier 2 and incorporate supplemental soil vapor sampling protocol into the guidance
- Defining “site” as the property where one or more tanks are or were located
- Use of the term “corrective action” rather than “risk management” throughout the guidance
- Correction of a conversion factor in Appendix D of the guidance
- Use of the term “free product” rather than “light non-aqueous phase liquid” throughout the guidance
- Correction of rule references throughout the guidance
- Replacement of the three sets of soil type specific Tier 1 risk-based target levels with a single set of risk-based target levels
- Updating the risk-based target levels to account for changes since 2004 in toxicity data and methodology and physical and chemical properties of contaminants
- Require the use of Tier 2 site-specific target levels if they are lower than the Tier 1 risk-based target levels
- Clarify when sampling and analysis for poly nuclear aromatic hydrocarbons in soil and groundwater are required
- Clarify sample preservation requirements
- Incorporate references to Department rules for closing borings, probe holes, and monitoring wells
- Elimination of redundant text
- Elimination of reporting forms

Guidance provisions related to these issues were amended and updated based primarily on:

- The experience of Department staff and external stakeholders in implementing the 2004 and 2004 amended guidance documents
- Input from states where similar programs have been successfully implemented
- Discussions with and review of documents published by the United States Environmental Protection Agency
- Discussions with commercial laboratory personnel having expertise in contaminant analyses
- Input from a private consulting company having expertise in the development of target levels using the most current methodology and toxicity data; and
- Consultation with staff of the Missouri Department of Health and Senior Services

In particular, the Department used the following to update the 2004 amended guidance:

1. The technical knowledge and experience of Department staff, staff of the Missouri Department of Health and Senior Services, staff of the Petroleum Storage Tank Insurance Fund, and private consultants;
2. *Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites*, E1739-95, American Society for Testing and Materials, November 1995;
3. Environmental Protection Agency, Integrated Risk Information System (IRIS); and
4. Environmental Protection Agency, August 2004, Risk Assessment Guidance for Superfund: Volume 1, Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment)<sup>4</sup>.

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<sup>4</sup> The Department contracted with The RAM Group to update the Tier 1 risk-based target levels; The RAM Group utilized the EPA documents listed at 3 and 4 in updating the risk-based target levels.

Since its inception in 1974, the Department has been involved in the cleanup of contaminated sites. Department staff have considerable experience in the investigation, risk assessment, and corrective action activities necessary to protect human health and the environment from risks posed by environmental contamination at petroleum storage tank sites under its authority. This rulemaking is not a new initiative but represents an improvement of the process used by the Department since January 2004 to investigate, assess, clean, and otherwise manage releases at petroleum storage tank sites. Since 2004, Department staff have received formal training in the application of the risk-based corrective action process. In addition, through day-to-day use of the process, staff have become highly knowledgeable about the process and the guidance, including the deficiencies of the latter. This knowledge and experience have made Department staff invaluable in determining how best to ensure the guidance is clear, practical, and protective.

#### **4.0 WHO WILL MOST LIKELY BE AFFECTED BY THE PROPOSED RULES, INCLUDING PERSONS WHO WILL BEAR THE COSTS OF THE PROPOSED RULES AND PERSONS WHO WILL BENEFIT**

The proposed rules have the potential to affect Missouri citizens who live near, work at, or visit petroleum storage tank sites and nearby properties; owners and operators of petroleum storage tanks; other parties responsible for or who take on responsibility for a tank site; the Missouri Petroleum Storage Tank Insurance Fund; and those who otherwise have an interest in the current and future use and development of petroleum storage tank sites. The latter would include developers, real estate entities, and banks and other lending institutions. Further details regarding directly and indirectly affected parties and beneficial and adverse effects of the proposed rules are provided in the following sections.

##### **4.1 Affected Parties**

The primary parties affected by this rulemaking are owners and operators of petroleum storage tank sites. Missouri citizens who live near, work at, or frequent areas near petroleum storage tank sites are potentially directly and indirectly affected by the rulemaking. The Missouri Petroleum Storage Tank Insurance Fund will be directly affected by the rule from a financial standpoint. Other parties who have an interest in the use and redevelopment of petroleum storage tank sites – primarily developers, real estate entities, and banks and other lending institutions – stand to be directly and indirectly affected by the proposed rules.

However, as explained above, the scope of this rulemaking is limited. The most significant aspect of the rulemaking is the incorporation of the 2013 updated guidance into rule. But the scope of the guidance update was also limited, as explained in Section 3.0 above. Of the updates, the most significant is a change in the Tier 1 risk-based target levels. Given this limited scope, the Department does not expect the rulemaking to significantly affect any party.

##### **4.1.1 Beneficial and Adverse Effects to Missouri Citizens**

The Department does not expect Missouri citizens to be either beneficially or adversely affected by the proposed rules because the scope of the proposed rulemaking is limited and leaves most aspects of the risk-based corrective action process provided for in the 2004 amended guidance (and the original 2004 guidance) in place.

#### **4.1.2 Beneficial and Adverse Effects to Responsible Parties**

The process provided for in the 2013 updated guidance will continue to facilitate the closure of petroleum underground storage tank sites in a consistent, expedient and cost-effective manner. That the scope of the guidance changes is limited is of benefit to tank owners and operators and their consultants because these parties are familiar with and understand the process as presented in the 2004 amended guidance (which has been in use since March 2005). In addition, these same parties will benefit from the improved clarity of the 2013 updated guidance and the application of updated risk-based target levels.

Based on the limited scope of the proposed changes to the guidance and rules, the Department does not anticipate that responsible parties will be adversely affected. The Department does not anticipate that the proposed rulemaking will result in a significant change in the cost of closing a tank site nor in the time required to do so. As above, most aspects of the risk-based corrective action process will not change as a result of this rulemaking.

### **5.0 ENVIRONMENTAL AND ECONOMIC COSTS AND BENEFITS**

Due to the limited scope of the guidance update and proposed rulemaking, the Department does not anticipate that significant environmental and economic costs or benefits beyond those brought about by the 2011 incorporation of the 2004 amended guidance into rule are likely to result from this rulemaking.

#### **5.1 Environmental and Economic Costs**

As with the 2004 amended guidance, the 2013 updated guidance allows contamination to remain in place provided site characterization and risk assessment demonstrate that doing so will not result in unacceptable risk to human health or the environment. Environmental harm could occur if the site characterization, risk assessment, or corrective action requirements of either guidance are not met. However, Department staff will continue to oversee application of the risk-based corrective action process by tank owners and operators and their consultants to ensure it is applied correctly.

With regard to economic costs, in comparison to the current rules and the 2004 amended guidance, the Department believes the proposed rules and 2013 updated guidance are unlikely to either increase or decrease the overall costs of applying the risk-based corrective action process to tank closures and sites.

#### **5.2 Environmental and Economic Benefits**

As with environmental and economic costs, the Department does not anticipate either increased or decreased environmental or economic benefits in connection with this rulemaking. Rather, the Department believes the benefits resulting from incorporation of the 2004 amended guidance into rule in 2011 will continue to be experienced by tank owners and operators, the citizens of Missouri, and other affected parties.

### **5.3 Effects on Small Business**

Small businesses<sup>5</sup> affected by this rulemaking would include those who own or operate petroleum storage tanks, own or operate gas station/convenience stores, deliver petroleum to storage tanks, own property on which petroleum storage tanks are located, have a solely economic interest in a petroleum storage tank site, and small businesses adjacent to petroleum storage tanks sites.

The Department expects that beneficial and adverse effects to small business will be as described in subsections 4.1.2, 5.1, and 5.2 above.

### **6.0 PROBABLE COSTS TO THE DEPARTMENT AND ANY OTHER AGENCY TO IMPLEMENT AND ENFORCE THE PROPOSED RULES AND ANY ANTICIPATED EFFECT ON STATE REVENUE**

The Department of Natural Resources is the primary state agency responsible for the implementation, application, and enforcement of the proposed rules. As such, costs associated with implementation, application and enforcement of proposed rules will be borne primarily by the Department of Natural Resources. Other state agencies that might be affected by the proposed rules include the Department of Agriculture and the Department of Health and Senior Services. Of these, the Department of Health and Senior Services is more likely to incur some limited costs related to implementation and application of the proposed rules. The Department of Natural Resources regularly asks the Department of Health and Senior Services for support services relative to the review and development of risk assessments and related data.

As explained above, the scope of the rulemaking and the guidance update are limited and therefore unlikely to significantly increase the Department's costs or otherwise effect state revenue. Department staff responsible for overseeing the application of the 2013 updated guidance will be made aware of the specific changes to the guidance through on the job training.

### **7.0 COMPARISON OF THE PROBABLE COSTS AND BENEFITS OF THE PROPOSED RULES TO THE PROBABLE COSTS AND BENEFITS OF INACTION, INCLUDING ECONOMIC AND ENVIRONMENTAL COSTS AND BENEFITS**

When the 2004 amended guidance was incorporated into rule in 2011, the rule specifically stated that the guidance may be used as a written procedure only until December 31, 2012. By updating the guidance to reflect current practice and removing the sunset date, the rules will clearly state that the updated guidance may be used as a written procedure.

### **8.0 DETERMINATION OF WHETHER THE PURPOSES OF THE RULES CAN BE ACHIEVED BY LESS COSTLY OR LESS INTRUSIVE METHODS**

The Department is not aware of less costly or intrusive methods for achieving the purposes of the proposed rulemaking. The Department's analysis indicates that the rulemaking will not increase costs nor result in more intrusive methods relative to the current rule provisions.

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<sup>5</sup> A small business is defined by Missouri statute as a for-profit enterprise with fewer than 100 full or part-time employees.

## **9.0 DESCRIPTION OF ANY ALTERNATIVE METHODS FOR ACHIEVING THE PURPOSES OF THE PROPOSED RULES THAT WERE SERIOUSLY CONSIDERED BY THE DEPARTMENT AND THE REASONS WHY THEY WERE REJECTED IN FAVOR OF THE PROPOSED RULES**

The Department did not consider any alternative methods for achieving the purposes of the proposed rules. As described above, the current rules state that owners and operators may use the 2004 amended guidance until December 31, 2012. Removing the December 31, 2012, date will clarify that the guidance may continue to be applied as appropriate. In addition, the Department is adding a reference to the 2013 updated guidance and adding language to specify when owners and operators may use one or the other or either guidance as a written procedure.

## **10.0 ANALYSIS OF SHORT-TERM AND LONG-TERM CONSEQUENCES OF THE PROPOSED RULES**

No short or long-term consequences are anticipated.

## **11.0 EXPLANATION OF THE RISKS TO HUMAN HEALTH, PUBLIC WELFARE OR THE ENVIRONMENT ADDRESSED BY THE PROPOSED RULES**

Many of the contaminants associated with releases from petroleum storage tank systems are toxic, some more than others, and can pose risks to human health, public welfare, and the environment. Human health risks might occur via one or more specific exposure pathways, including inhalation of contaminant vapors, dermal contact with contaminants or media containing contaminants, and ingestion of contaminants, the latter primarily via the incidental ingestion of contaminated media including both soil and, more often, groundwater. As is frequently true with contaminants of all types, many of the contaminants associated with petroleum pose greater risks to children, the elderly, and those with pre-existing health problems.

The proposed rules address these risks by continuing to allow the application of a risk-based corrective action process under which all actual and potential exposure pathways must be evaluated to determine the level of risk posed to receptors. In addition, target levels are developed to be protective of even sensitive receptors. When excessive risk is identified through risk assessment, owners and operators must take action to reduce the level of risk to at or below acceptable levels. Incorporation of both the 2004 amended and 2013 updated guidance documents into rule will ensure that a risk-based corrective action process continues to be available for use at all petroleum storage tank sites.

That said, as described above, the proposed rules do not substantively change the risk-based corrective action process requirements currently in-place. The 2004 amended guidance document was updated in 2013 primarily to streamline and clarify process requirements and provisions, though a few requirements were changed, including most notably the Tier 1 risk-based target levels. The proposed and current rules address the same risks to human health, public welfare, and the environment.

## **12.0 IDENTIFICATION OF THE SOURCES OF SCIENTIFIC INFORMATION USED IN EVALUATING THE RISKS AND A SUMMARY OF SUCH INFORMATION**

As explained in Section 11.0 above, the most notable actual change brought about by the proposed rules is an update of the Tier 1 risk-based target levels. No new risks have been identified and therefore the requirements of the risk-based process remain nearly identical to those provided for by the 2004 amended guidance. The sources of scientific information used in updating the target levels include:

- The methodology and chemical specific toxicity factors used to update the Tier 1 risk-based target levels are from the hierarchy of sources specified in the U.S. Environmental Protection Agency Office of Solid Waste and Emergency Response, or OSWER, directive 9285.7-53, *Human Health Toxicity Values in Superfund Risk Assessments* (EPA, December 2003). Specifically, the OSWER directive recommends the following sources: (i) Integrated Risk Information System, or IRIS, (ii) Provisional Peer Reviewed Toxicity Values, or PPRTVs, and (iii) Miscellaneous Sources. The last includes:
  - (a) National Center for Environmental Assessment, or NCEA, as listed in EPA's Region 9 Preliminary Remediation Goal, or PRG, Table.
  - (b) California Office of Environmental Health Hazard Assessments, or OEHHAs, chemical database.
  - (c) Health Effects Assessment Summary Tables or HEAST as listed in EPA's Region 9 PRG tables.
  - (d) Table for Texas Risk Reduction Program, or TRRP.

## **13.0 DESCRIPTION AND IMPACT STATEMENT OF ANY UNCERTAINTIES AND ASSUMPTIONS MADE IN CONDUCTING THE ANALYSIS ON THE RESULTING RISK ESTIMATE**

The requirements of the risk-based corrective action process are not changing due to the proposed rules. The 2004 amended guidance was updated in 2013 but only insofar as is described at Section 3.0 above. The update primarily streamlines and clarifies the risk-based corrective action process, with only an update of the Tier 1 risk-based target levels constituting a substantive change in the requirements of the guidance. The limited scope of the effort meant that it does not involve uncertainties or assumptions.

## **14.0 DESCRIPTION OF ANY SIGNIFICANT COUNTERVAILING RISKS THAT MAY BE CAUSED BY THE PROPOSED RULE**

The Department is unaware of any countervailing risks that may be caused by the proposed rules.

## **15.0 IDENTIFICATION OF ALTERNATIVE REGULATORY APPROACHES THAT WILL PRODUCE COMPARABLE HUMAN HEALTH, PUBLIC WELFARE OR ENVIRONMENTAL OUTCOMES**

Not applicable.

## **16.0 INFORMATION ON HOW TO PROVIDE COMMENTS ON THE REGULATORY IMPACT REPORT DURING THE 60-DAY PERIOD BEFORE THE RULE IS PROVIDED TO THE SECRETARY OF STATE**

On March 3, 2013, the department posted a notice in the *Jefferson City News Tribune* that the Regulatory Impact Report was available for public comment for a period of 60 days. The same notice was posted on the department's Web page at <http://www.dnr.mo.gov/env/hwp/rules-dev-hwp.htm>. Persons wanting to comment on the Regulatory Impact Report were asked to submit comments in writing to Timothy Chibnall, Hazardous Waste Program, P.O. Box 176, Jefferson City, Missouri 65102 or by fax to 573-751-7869. The deadline for submitting comments was clearly explained in the newspaper advertisement and the Web page announcement.

## **17.0 INFORMATION ON HOW TO REQUEST A COPY OF COMMENTS OR INFORMATION ABOUT WHERE THE COMMENTS WILL BE LOCATED ON THE WEB**

Requests for copies of the comments received on this Regulatory Impact Report may be sent to Timothy Chibnall, Hazardous Waste Program, P.O. Box 176, Jefferson City, Missouri 65102 or [tim.chibnall@dnr.mo.gov](mailto:tim.chibnall@dnr.mo.gov), or faxed to 573-751-7869. Comments on the report and any associated changes to the proposed rules will be posted on the Hazardous Waste Program's rules development Web page at <http://www.dnr.mo.gov/env/hwp/rules-dev-hwp.htm>.

## **18.0 REFERENCES**

Missouri Department of Natural Resources, 1998. Cleanup Levels for Missouri, or CALM. September.

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