

ACKNOWLEDGEMENTS

The Missouri Department of Natural Resources acknowledges the help provided by stakeholders in the development and revision of this document. These stakeholders, too many to individually list here, participated in numerous meetings, small subgroups, and conference calls. Their untiring efforts and support of the process are highly appreciated.

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FOREWORD

This guidance document describes a risk-based process that persons responsible for addressing petroleum releases at petroleum storage tank sites may use to satisfy the regulations administered by the Tanks Section of the Missouri Department of Natural Resources (MDNR). This process is consistent with the policies and procedures discussed by the Groundwater Remediation Rule stakeholders group and documented in their June 2003 *Process Document*.

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This final document is a result of:

- Policies agreed upon, and input received from, the stakeholders group,
- MDNR's experience in the management of petroleum impacted sites in Missouri,
- Assistance provided by outside consultants, and
- Review of comments received on the draft document.

Deleted: A draft of this guidance document was distributed to a large number of interested stakeholders in November 2003 for comment. The department reviewed all of the comments submitted and, as appropriate, revised the guidance document accordingly. A summary of the comments is available at <http://www.dnr.mo.gov/alpd/hwp/rbca-04-comments.pdf>. ¶

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IMPLEMENTATION OF MISSOURI'S RISK-BASED CORRECTIVE ACTION (MRBCA) PROCESS

The MRBCA Process for Petroleum Storage Tanks may be used at any petroleum storage tank site. Persons conducting investigations of newly-discovered releases are encouraged to use this guidance.

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REVISION OF FEBRUARY 2004 AND MARCH 2005 MRBCA TANKS GUIDANCE

This January 1, 2013, version of the MRBCA Process for Petroleum Storage Tanks guidance document replaces the following guidance of the Department of Natural Resources:

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- February 2004, Missouri Risk-Based Corrective Action Process for Petroleum Storage Tanks guidance document, as amended March 8, 2005 by 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 18, 2005, Soil Type Determination Guidelines; March 3, 2005, Table 3-1 Default Target Levels; April 2005, Table 4-1 Soil Concentration Levels to Determine the Need for Groundwater Evaluation During Tank Closure; February 2005, Tables 7-1(a) through 7-12(c) Tier 1 Risk-Based Target Levels; and the April 21, 2005, Soil Gas Sampling Protocol.

Deleted: *Underground Storage Tank Site Characterization Guidance Document*, February 1992; the *Underground Storage Tank Corrective Action Guidance Document*, February 1992; and the *Underground Storage Tank Closure Guidance Document*, March 1996.

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DEPARTMENT WEBSITE FOR IMPLEMENTATION OF MRBCA

This document is available on the web at:

<http://dnr.mo.gov/env/hwp/tanks/mrbca-pet/mrbca-pet-tanks.htm>.

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NOTE: This document represents a final draft of a stakeholder workgroup that is attempting to formulate guidance for the implementation of Missouri's risk-based corrective action program for petroleum storage tank sites consistent both with the mandate of SB 231 and various MDNR communications regarding the implementation of risk-based corrective action. While this document has been prepared in a consensus workgroup manner, all parties recognize that it is subject to additional revision based on experience. Therefore, while it is to be used generally as guidance, it is not yet a regulation of the State of Missouri. It is anticipated that this document will continue to evolve based on experience. A separate stakeholder group has been formed to monitor both the positive and negative experiences associated with efforts to implement this guidance in the context of actual Missouri sites. For further information on this Guidance Document and its application, contact MDNR.¶

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API	American Petroleum Institute
AST	Aboveground Storage Tank
ASTM	American Society for Testing and Materials
AUL	Activity Use and Limitations
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes (total)
bgs	Below Ground Surface
cfs	Cubic Feet per Second
CAP	Corrective Action Plan
COC	Chemicals of Concern
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CSR	Code of State Regulations
DAF	Dilution Attenuation Factor
DOT	Department of Transportation
DTL	Default Target Level
EDB	Ethylene Dibromide
EDC	Ethylene Dichloride
EER	Environmental Emergency Response
EM	Exposure Model
EPA	Environmental Protection Agency
ft	Feet
GSRAD	Geological Survey and Resource Assessment Division
HWP	Hazardous Waste Program
IELCR	Individual Excess Lifetime Cancer Risk
IRIS	Integrated Risk Information System
LNAPL	Light Non-Aqueous Phase Liquid
LEL	Lower Explosive Limit
MCL	Maximum Contaminant Level
MDNR	Missouri Department of Natural Resources
MEGA	Missouri Environmental Geology Atlas
MLWL	Mean Low Water Level
MNA	Monitored Natural Attenuation
MRBCA	Missouri's Risk-Based Corrective Action
MSDS	Material Safety Data Sheet
MTBE	Methyl tert-Butyl Ether
NAPL	Non-Aqueous Phase Liquid
NELAP	National Environmental Laboratory Accreditation Program
NFA	No Further Action
OAC	Outreach and Assistance Center
OVM	Organic Vapor Monitor
PAH	Polynuclear Aromatic Hydrocarbons
PID	Photoionization Detector

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PNA	Poly Nuclear Aromatics
POD	Point of Demonstration
POE	Point of Exposure
POTW	Publicly Owned Treatment Works
PSTIF	Petroleum Storage Tank Insurance Fund
QA/QC	Quality Assurance/Quality Control
RBCA	Risk-Based Corrective Action
RBTL	Risk-Based Target Level
RCRA	Resource Conservation and Recovery Act
RM	Risk Management
RMP	Risk Management Plan
RRL	Required Reporting Limit
RSMo	Revised Statutes of the State of Missouri
SCM	Site Conceptual Model
SSTLs	Site-Specific Target Levels
SWMP	Solid Waste Management Program
TC	Toxicity Characteristic
TDS	Total Dissolved Solid
TPH-DRO	Total Petroleum Hydrocarbon-Diesel Range Organic
TPH-GRO	Total Petroleum Hydrocarbon-Gasoline Range Organic
TPH-ORO	Total Petroleum Hydrocarbon-Oil Range Organic
TSP	Trisodium Phosphate Dodecahydrate
UEL	Upper Explosive Limit
USDA	United States Department of Agriculture
USGS	United States Geological Survey
UST	Underground Storage Tank
VOA	Volatile Organic Analysis
VOC	Volatile Organic Compounds
WPP	Water Protection Program

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