

# Land Uses and Risk-Based Corrective Actions for Petroleum Releases

by Rachel A. Yates

**B**eginning February 1, 1999, the state of Colorado began assessing environmental cleanups from petroleum storage tanks by application of risk-based corrective action ("RBCA") methodology. Given the anticipated discovery of petroleum releases as petroleum storage tank owners and operators continue to upgrade or remove their tanks to comply with the U.S. Environmental Protection Agency's upgrade requirements, implementation of RBCA is timely.

One market study indicates that 40 percent of petroleum storage tank owners and operators nationally have undertaken remediation of sites following the tank upgrades.<sup>1</sup> Unfortunately, implementing RBCA on a practical level can leave property owners and tank owner/operators at odds over possible restrictions on property use and cleanup standards.

## RBCA Regulation Of Releases

The new regulations, adopted December 21, 1998, require all petroleum storage tank owners and operators to incorporate an RBCA approach in response to confirmed releases.<sup>2</sup> Sites that already have an approved corrective action plan or ongoing remediation may apply for re-

consideration under RBCA, but are not required to do so.<sup>3</sup>

As adopted by the Oil Inspection Section of the Colorado Department of Labor and Employment ("OIS"), this RBCA approach compares levels of "chemicals of concern" (specifically benzene, toluene, ethylbenzene, and xylene) at the site with predetermined risk-based screening levels ("RBSLs").<sup>4</sup> The tank owner/operator also must sample for total petroleum hydrocarbons because TPH may contain certain polynuclear aromatic hydrocarbons that, above a defined threshold level, pose a risk to human health and the environment.<sup>5</sup> The RBSLs depend on the potential exposure risks to the environment and to human health in light of particular uses of the site.<sup>6</sup>

Under the new regulations, when a release of gasoline or other petroleum products occurs, the tank owner or operator must identify potential points of exposure ("POEs")—that is, pathways through which humans or sensitive environments may come into contact with chemicals of concern.<sup>7</sup> By reference to known conditions at the site, an exposure pathway might be eliminated from further consideration as not indicative of actual risk.<sup>8</sup>

Once any emergency abatement measures have been performed, the tank owner/operator must collect the necessary information to perform a Tier 1 analysis by comparing site source concentrations of the chemicals of concern to the corresponding Tier 1 RBSLs. If the source concentrations at the site are lower than the Tier 1 RBSLs for all completed exposure pathways, and if the TPH threshold values have not been exceeded, a "no further action required" designation may be requested.<sup>9</sup> If, however, the source concentrations exceed the Tier 1 RBSLs, the tank own-

er/operator may opt either to perform a Tier 1A analysis or to submit a corrective action plan, which may include proposed corrective action and a Tier 2 evaluation.<sup>10</sup>

A Tier 1A analysis allows the tank owner/operator to apply more site-specific geologic and hydrogeologic information for the development of potentially less stringent, but still protective, cleanup goals.<sup>11</sup> If the tank owner/operator can show that the site-specific RBSLs are not exceeded, the tank owner/operator also may seek closure without remediation.<sup>12</sup>

A corrective action plan must be submitted for all sites that cannot be closed at either the Tier 1 or Tier 1A levels.<sup>13</sup> The corrective action plan can either (1) evaluate three possible remediation methodologies to meet the Tier 1 or Tier 1A levels or (2) propose two methods of remediation and a Tier 2 evaluation, based on the collection of additional site-specific data.<sup>14</sup> The most significant differences between Tier 1 and Tier 2 models result from the elimination of certain assumptions used for Tier 1 in favor of actual site data. For example, in Tier 1 models, the contaminant source is assumed to be constant over time; a Tier 2 model can account for a finite source.<sup>15</sup> In most cases, application of a Tier 2 model will result in less stringent, though equally protective, cleanup levels, but certain site conditions might warrant even more stringent cleanup goals than the Tier 1 RBSLs.<sup>16</sup>

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The primary benefit of the RBCA approach is the tailoring of remediation alternatives to known risks due to contamination of the property. For years prior to the adoption of RBCA, risk factors were still considered in the form of remedial action categories, but in a less systematic and formalized fashion. Because of competing interests of property owners and tank owner/operators, however, not every person responsible for a site remediation will obtain the full benefit of RBCA.

For example, the regulations define a property boundary as a POE in establishing the "soil leaching to groundwater" pathway, even if there is no actual contact at the boundary with a sensitive environment or a person.<sup>17</sup> The regulations effectively treat an inanimate, legal change of ownership as a potential "receptor," diminishing the value of fate and transport models to the extent they must rely on overly conservative assumptions, rather than actual risk. This definition was adopted, however, because the OIS was concerned that a tank owner/operator could not control activities just beyond the property boundary.<sup>18</sup> Accordingly, the most conservative approach was to treat the property boundary as a potential point of exposure for that exposure pathway.<sup>19</sup> By broadly defining "points of exposure" to include property boundaries, the regulations underscore the potential conflict between property uses and RBCA.

## Land Use Restriction Conflicts

Likewise, the regulations' classification of land use could cause similar conflicts for property owners. The OIS regulations rely on county zoning determinations to establish certain RBSLs. Specifically, the RBCA regulations classify all property as "residential," unless it is currently zoned "industrial."<sup>20</sup> Non-zoned parcels in unincorporated areas also are treated as residential properties.<sup>21</sup> Different RBSLs are established based on this zoning classification. For example, for exposure pathways linked to surficial soils, the Tier 1 RBSL for benzene varies from 4.1 mg/kg for residential properties to 12 mg/kg for industrial properties. Costs of remediating to the more stringent level might be significantly higher, making the zoning classification a key determinant in the cost of remediation.

The philosophy behind this restriction is that applying county zoning requirements will more effectively match land use with the risk-based assessment. Accord-

ing to the OIS, not all counties re-zone commercial properties on a change to residential use.<sup>22</sup> Accordingly, a corrective action plan appropriate for property presently in commercial use could ignore increased risks for individuals who later use the property as a residence.<sup>23</sup> Establishing "residential use" as the default for all property that is not zoned industrial was intended to avoid this problem. The OIS informally suggested that it might apply alternate land use determinations (such as commercial status) if a county's zoning laws required approval for changes in use, but the regulations do not provide any such exception.<sup>24</sup>

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This "bright-line" land use test resolves the risk issue but might create unanticipated conflicts between property interests. Because each county may apply different criteria to a zoning determination, reliance on zoning determinations could lead to inconsistent application of RBCA standards to similar sites. Moreover, as adopted, the regulations have the effect of treating heavy commercial properties as if they are in residential areas, thereby making the requirements for remediation potentially more onerous and costly, even if no increased exposure risk is present.

## Reimbursement of Remediation Costs

The costs of remediation to residential or industrial RBSLs might be reimbursed by the Colorado Petroleum Storage Tank Fund for eligible tank owner/operators that are substantially in compliance with OIS regulations and for other persons designated by statute.<sup>25</sup> Partly in response to industry concerns, the OIS did not tie eligibility for reimbursement to the RBCA process, and the regulations specify that work required under the regulations does not automatically qualify for reimbursement.<sup>26</sup>

Because of the absence of an intermediate land use classification, however, a tank owner/operator may be required to perform a remediation that cleans the property to a much more stringent, and costly, residential RBSL, with no guarantee that these seemingly "extra" costs will be reimbursed. While a risk of denial of reimbursement is always present, it may be particularly irksome for a tank owner/operator to accept a denial of reimbursement if the owner/operator already feels that it has been required to pay a higher cost to meet a more onerous standard for its commercial property.

In some circumstances, though, the decision to keep RBCA and reimbursement separate can benefit tank owner/operators that choose voluntarily to satisfy more stringent RBSLs. For instance, for other legal or financial reasons, a tank owner might choose to actively remediate its industrial property to the Tier 1 RBSLs, rather than apply a groundwater monitoring methodology permitted by its Tier 2 evaluation. If the tank owner has conducted the necessary technical and economic feasibility evaluation and is otherwise eligible for reimbursement,<sup>27</sup> the fund could provide reimbursement even though a less stringent remediation alternative was available by application of RBCA.<sup>28</sup>

## Restrictions on Land Use

Although the corrective action plan and no further action required letter do not usually contain specific land use restrictions, they are implicit in the RBCA analysis. Where the tank owner or operator leases the property, rather than owns it, competing interests about land use restrictions may collide. The OIS has no authority to compel landowners to submit to a corrective action plan proposed by the tank owner or operator and approved by the OIS, particularly where the plan has explicit or implied restrictions on the future use of the property. Thus, for instance, if the property owner refuses to consent to an otherwise protective Tier 2 remediation, the added benefits of a site-specific RBCA analysis might not be achieved.

Petroleum hydrocarbon impacts to off-site properties add a further layer of complexity. The regulations require the tank owner or operator to disclose the names of any third parties or properties impacted by the release, but the mechanisms for public participation appear to provide only an opportunity for comment and no substantive rights to third parties.<sup>29</sup> Notice is not even required to be given to a third party, de-

spite the tank owner/operator's obligation to disclose this information to the state.<sup>30</sup>

### ***Change in Land Use***

The question of when a change in land use will affect RBCA also raises a number of thorny legal issues that are not solved by the regulations. RBCA-based corrective action plans frequently will be based on present and intended future uses of the property. Those uses are not always known by the property owner during the risk-assessment stage of remediation. When the property owner wishes to change its use of the property (even if this new use does not contemplate a change to the zoning of the property), the question arises whether a supplemental RBCA analysis is required.

For industrial properties, the tank owner/operator is required to provide official documentation to the OIS that the OIS has been added to the list of parties to be notified in the event of an application for re-zoning.<sup>31</sup> Though not specified in the regulations, the OIS intends to require a supplemental RBCA analysis in the event it learns of the re-zoning of industrial properties.

The questions of whether a supplemental RBCA analysis is required when a change in use (but not change in zoning) occurs, and by whom, is not answered by the regulations or guidance documents. Likewise, the regulations do not provide a mechanism for notice to the OIS for these types of change in use. Unwitting purchasers might rely on the existing remediation system, without recognizing the implicit restrictions on change in use resulting from the RBCA approach.

The problems associated with change in use can be particularly acute when a no further action required determination has been granted. A change in use could effectively nullify such a determination because exposure pathways that had been eliminated from analysis under the earlier site conditions now pose unevaluated risk to human health or sensitive environments. At a minimum, a new RBCA analysis is probably warranted; in some cases, additional remediation might be required.

When lenders or others have relied on the "no further action required" ruling, blame-shifting is likely to occur if additional costs or liability result. Moreover,

because the OIS's jurisdiction is limited to tank owner/operators,<sup>32</sup> it will seek out these entities to perform the supplemental RBCA analysis, even if the tank owner/operator is no longer affiliated with the property.

Thoughtfully drafted access and remediation agreements can address these issues up front and have become a necessity to spell out the rights and obligations of the various parties interested in the property. When a risk-based corrective action is dependent on restricting future land use, the parties must negotiate who will bear the cost of diminished property value, if any, and the risks associated with a decision by the OIS to re-open the property for a supplemental RBCA analysis. In some cases, the transactional costs associated with trying to persuade third parties to accept the RBCA analysis may well outweigh the cost of simply remediating the property to the most stringent RBSLs.

### **Participation in the Regulatory Process**

The OIS strove to make the regulatory change one of consensus by involving af-

affected petroleum storage tank owners and operators and others in the industry. A broad-based "stakeholders group," composed of representatives from large and small oil companies, governmental agencies, related industries, and other interested individuals, participated periodically in discussions with the OIS, beginning in July 1998. At the hearing on December 7, 1998, the OIS received public comment on its proposal to adopt RBCA. Petroleum storage tank owners and operators applauded the OIS's decision to move to RBCA, but urged the OIS to be flexible about re-evaluating the new program after it has been in place for a sufficient period of time.<sup>33</sup>

The revised Storage Tank Facility Owner/Operator Guidance Documents, which now detail the RBCA process, underwent a similar review by a modified stakeholders group on January 5, 1999. The guidance documents were revised following this review process, particularly to address how sites impacted by total dissolved solids ("TDS") or high levels of metals will be treated. These changes were intended to make the RBCA approach utilized by the OIS consistent with the requirements of the Colorado Water Quality Control Commission.

The OIS staff received training in January 1999 on implementation of RBCA.

The OIS and other industry groups sponsored training of remediation consultants and other interested participants in February 1999. Tank owner/operators can receive more information through the OIS's outreach programs in April 1999.

Copies of the amended regulations and guidance documents are available from the Oil Inspection Section, Tower 3, Suite 600, 1515 Arapahoe, Denver, CO 80202; or on the OIS web site: <<http://oil.cdle.state.co.us>>.

## NOTES

1. Hornbeck, 1998 *Underground Storage Tank Status Report* (Petroleum Marketers Association of America) at 1.
2. See 7 C.C.R. 1101-14, §§ 1-1, 5-1(a).
3. Colorado Department of Labor and Employment, Oil Inspection Section, Petroleum Storage Tank Owner/Operator Guidance Documents (Feb. 1999) [*hereinafter* "OIS Guidance Documents"], at § 1.0.
4. See 7 C.C.R. 1101-14, §§ 5-2(e), 5-3.
5. OIS Guidance Documents at § 4.2.
6. See 7 C.C.R. 1101-14, § 5-3.
7. See 7 C.C.R. 1101-14, §§ 1-5(63), 5-3.
8. OIS Guidance Documents at § 7.5 and Table 7-2.
9. OIS Guidance Documents at § 7.1.
10. OIS Guidance Documents at § 7.1.
11. OIS Guidance Documents at § 8.0.
12. OIS Guidance Documents at § 8.0.
13. 7 C.C.R. 1101-14, § 5-3(h).

14. 7 C.C.R. 1101-14, § 5-4(a).
15. OIS Guidance Documents at § 11.1.
16. OIS Guidance Documents at § 11.1.
17. See 7 C.C.R. 1101-14, § 1-5(63).
18. Record of Public Hearing, held December 7, 1998. Tape recordings of the public hearing are available through the Oil Inspection Section; see also OIS Guidance Documents at § 7.3.
19. Record of Public Hearing, held December 7, 1998.
20. See 7 C.C.R. 1101-14, § 5-3(e).
21. OIS Guidance Documents at § 7.6.
22. OIS Guidance Documents at § 7-6.
23. *Id.*
24. Record of Public Hearing, held December 7, 1998.
25. CRS § 8-20.5-303.
26. See 7 C.C.R. 1101-14, § 5-1.
27. See 7 C.C.R. 1101-14, § 5-4(b), (c).
28. The requirements for fund eligibility and the percentage reduction penalties for non-compliance are beyond the scope of this article, but the practitioner will want to be familiar with the OIS regulations and policies before reimbursement is sought. See, e.g., 7 C.C.R. § 1101-14, Art. 8; Colorado Petroleum Storage Tank Committee Policies Nos. 1-22.
29. See 7 C.C.R. § 1101-14, §§ 5-4(d), 5-4.5.
30. *Id.* at § 5-4.5.
31. OIS Guidance Documents at § 7.6.
32. CRS § 8-20.5-202.
33. See Record of Public Hearing, held December 7, 1998.