



RISK BULLETIN

Institutional Controls: Limiting Liability And Exposures At Contaminated Sites

The United States Environmental Protection Agency (USEPA), and many state and local regulatory agencies allow the incorporation of institutional controls (ICs) into an overall remedy for contaminated sites. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or “Superfund” and the National Contingency Plan in 40 CFR 300 recognize the use of ICs and related enforceable measures as part of the remedial alternative at sites.

In addition to Superfund sites, ICs may also be used at brownfields, federal facilities, and Resource Conservation and Recovery Act (RCRA) corrective action sites.

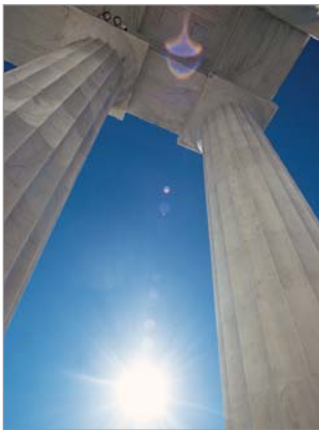
The purpose of this review is to clarify the difference between engineering controls and ICs and present land use restriction definitions used by a variety of organizations. Selection, implementation, enforcement, and tracking of ICs are also addressed.

“Deed restriction” is a generic term often used to describe ICs, but it is not a traditional property law term, and can be misleading. ICs can be

used for many reasons and come in different types. These include restricting site use, modifying behavior, and providing information to people. It is important to be specific about the types of ICs under consideration or established for a site. Some examples of ICs include easements, environmental covenants, deed notices, well drilling prohibitions, zoning restrictions, and special building permit requirements.

ICs may be implemented during any phase of site investigation or cleanup to ensure the short-term and long-term protection of human health and the environment. ICs may also be used to address exposure pathways from residual contamination that cannot be economically or technically addressed with existing engineering controls. ICs are most effective if they are layered or linked with various controls at the same time or implemented in series at different times.

Remediation work plans and engineering controls are expected to address the principal threats posed by contaminated sites; however, ICs often play an important support role in active risk-based remediation. ICs are vital elements of response alternatives because they simultaneously influence and supplement the physical component of site remediation of wastes and environmental media. Improper implementation,



lack of enforcement, or violation of ICs, however, can result in additional pollution liability for existing and previous site owners, as well as professional liability for environmental professionals and consultants.

DEFINITIONS – WHAT ARE ICs?

Organizations have defined ICs differently depending on whether they include administrative and legal controls or physical engineering controls. Existing and future land use and ICs are usually linked. ICs can be viewed as subsets of Activity and Use Limitations (AULs) or Land Use Controls (LUCs).

ASTM International has developed ASTM E2091-05 “Standard Guide for Use of Activity and Use Limitations, Including Institutional and Engineering Controls.” ASTM includes both engineering controls and ICs in its definition of AULs. An engineering control is considered a physical modification to a site or facility to reduce or eliminate the potential for exposure to chemicals of concern. This would include controls such as slurry walls, capping, or hydraulic controls (e.g., pump and treat systems) for groundwater. ASTM defines an IC as a legal or administrative restriction on the use of, or access to, a site or facility to eliminate or minimize potential exposures to chemicals of concern.

Similarly, the U.S. Department of Defense (USDOD) defines LUCs as any type of physical, legal, or administrative mechanism that restricts use of, or limits access to, real property to prevent or reduce risks to human health and the environment. Physical mechanisms can include barriers, fences or signs. Legal and administrative mechanisms are imposed to ensure the continued effectiveness of land use restrictions and compliance with these requirements. Legal controls may include covenants, easements, and deed notices, while administrative controls may

include adopted local land use plans and ordinances, construction permitting, and other land use management systems.

The U.S. Department of Energy (USDOE) established the Office of Legacy Management to manage its long-term post-closure responsibilities. They are supported by the DOE Office of Environmental Management



in developing long-term surveillance and maintenance plans. USDOE defines “long-term stewardship” as physical controls, institutions, information and mechanisms needed to ensure protection of people and the environment at sites where USDOE has completed or plans to complete cleanup. USDOE more narrowly defines ICs as non-engineering mechanisms, particularly legal measures, designed to limit or identify activities at a particular property in order to minimize human exposure to hazards.

USEPA also does not include physical controls and barriers (e.g., fencing) in their definition of ICs. USEPA defines ICs as non-engineered instruments such as administrative and/or legal controls that minimize the potential for human exposure to contamination by limiting land or resource use. USEPA divides ICs into four categories:

- **Government Controls:** include local laws or permits (e.g., county zoning, building permits, and Base Master Plans at military facilities)
- **Proprietary Controls:** include property use restrictions based on private property law (e.g., easements and covenants)

- **Enforcement Tools:** include documents that require individuals or companies to conduct or prohibit specific actions (e.g., environmental cleanup consent decrees, unilateral orders, or permits)
- **Informational Devices:** include deed notices or public advisories that alert and educate people about a site

ICs help reduce the possibility that people will come in contact with contamination at a remediation site and they may also help protect the remedial design and/or equipment.

Various other groups have been involved with educating the public on what LUCs and ICs are and how they are used. The International City/County Management Association (ICMA) and its partners (including USEPA) understand the importance of providing a clearinghouse of information on the subject for the use of all stakeholder groups. ICMA provides this definition: environmental LUCs — also known as ICs, AULs, and environmental use restrictions (EURs) — are legal and administrative measures to protect human health and the environment from risk-based cleanups in which residual contamination is contained on site. LUCs limit human exposure by restricting activity, use, and access to properties with residual contamination.

ICMA maintains an extensive on-line library on the Land Use Controls website (LUCs.org) of documents pertaining to LUCs from non-profit research groups, local governments, local reuse agencies, restoration advisory boards, the private sector, and federal and state agencies. ICMA has compiled a wide range of documents, including zoning codes, model covenants or deed restrictions, fact sheets, case studies, and reports, that creates a valuable resource for all stakeholders challenged with the implementation and effective coordination of LUCs. The website

has three main sections: Brownfields, Military Bases and Federal Facilities, and Superfund Sites.

WHEN AND HOW ARE ICs USED?

ICs are normally used when waste is left on site, when there is a limit to activities that can be safely conducted on site, and/or when remediation equipment remains on site. Informational ICs about previous land use and contamination may even be established after a successful remediation has been completed; for example, a USDOD parcel remediated for unexploded ordnance (UXO). ICs can play an important role when a cleanup is conducted that is too difficult or costly to remove all contamination from a site. ICs are most often used throughout a site cleanup, including when:

- Contamination is first discovered (i.e., to protect people from coming in contact with potentially harmful materials while the site is being investigated).
- Cleanup work is on-going, which in some cases may take many years.
- Some amount of contamination remains on site as part of a cleanup remedy.



Typically, ICs are part of a larger cleanup solution and serve as a non-engineered layer of protection. For example, an IC may be needed at a former landfill to notify the community and prevent future excavators from digging through a clay cap that prevents water infiltration into underlying waste. Also, engineering solutions may result in the installation of remediation systems (e.g., groundwater pumping and treatment) that are subject to long-term operations and maintenance (O&M) requirements. ICs may be imposed

to ensure that engineering control O&M obligations are maintained and protected regardless of whether there is a change in site ownership or use.

ASTM identifies eight objectives in using AULs and ICs, with the following principal purposes:

- Eliminating exposure pathways for, or reducing potential exposures to, chemicals of concern (COCs)
- Providing notice to property owners and holders of interests in the property (e.g., tenants, lenders, developers, etc.) about the presence and location of COCs
- Identifying the objectives and goals of each AUL/IC
- Identifying the exposure assumptions upon which each AUL/IC is based
- Identifying future site uses and activities that would result in maintaining acceptable or no significant risk conditions
- Identifying future site uses and activities that should not occur because they may result in unacceptable exposures to human or ecological receptors at or near the site
- Specifying long-term stewardship objectives, and the entities responsible for implementing and paying for them
- Specifying long-term performance standards (i.e., O&M obligations) necessary to ensure objectives and goals of AUL/ICs continue to be met

Decisions about how many and what types of ICs are needed are usually site-specific and risk-based. USEPA has issued guidance for site managers in identifying, evaluating, and selecting ICs. This guidance encourages the use of ICs in “layers” and/or in “series” to enhance their overall protectiveness. Layering means using more than one IC all with the same goal (e.g., using a consent decree, deed notice and covenant

together to prevent the use of a drinking water well). Using an IC in series means using different ICs over time when site circumstances or IC processes change (e.g., ICs may become less restrictive over time as remediation systems progress toward cleanup goals).

USEPA identifies the following common considerations for when and how to implement ICs:

- Level of experience and resource capacities of the party performing the remediation
- Who the intended ICs will affect and how
- Type of enforcement mechanism used (e.g., consent decree, permit, ordinance)
- Who will be responsible for enforcing (i.e., regulatory agency and program)
- Likelihood of future redevelopment and/or reuse of the site
- Degree of cooperation exhibited by the different levels of government and community involved in the cleanup

Because of federal ownership, there are significant differences in the way ICs are applied at USDOD and USDOE facilities. Some proprietary or governmental controls cannot be applied on



active federal facilities; however, there are other options available. For example, the USDOD has the ability to retain property interest in bases being transferred as part of closure (i.e., an easement intended to assure the protectiveness of the remedy). For active bases, ICs are commonly addressed through remedy selection documents, base master plans, and separate Memorandums of Understanding.

The ASTM standard provides guidance for identifying and selecting AULs and ICs. Before this

process can begin, there must be a good understanding of the site COCs, sources of exposure, exposure routes (e.g., dermal, ingestion, inhalation), exposure pathways (e.g., air, surface water, ground water, soil, sediments), likely receptors (human and ecological), and the anticipated future use of the site. This standard does not mandate any one particular type of activity and use limitation, but merely serves to help users identify, implement and maintain the types of AULs and ICs that may be appropriate in programs using a risk-based decision-making approach. Various decision-making flow charts and checklists are offered in the standard.

ASTM presents AUL (IC) screening and balancing criteria which should be evaluated early in the remedial action selection process. If they pass the five screening criteria, then they are evaluated against the three balancing criteria. The criteria are as follows:

All alternatives should be evaluated against each COC and each factor that drives site risks. It is important for site owners and project managers to consult with regulatory agencies on proposed solutions and to identify any additional statutory or administrative considerations. Also, community involvement programs and outreach approaches should factor in feedback from all site stakeholders early in the remedial action selection process.

ARE ICS RELIABLE AND ENFORCEABLE?

A key challenge to ICs is that they are often implemented, monitored, and enforced by various levels of federal, state, tribal, or local governments. This can include regulatory agencies or municipalities (or other government units) in which the property is located. Private and public sector entities may also be party to covenants, including any person that is granted power to

SCREENING CRITERIA	BALANCING CRITERIA
Effectiveness – will they control/minimize potential exposures, both in the short-term and long-term?	Long-Term Reliability and Durability – are there state or local laws that may limit reliability (i.e., zoning may be subject to change) or may limit durability/ enforceability (i.e., renewal clauses may require a restriction be re-written within a given time frame). The longer the term of potential exposure, the more important it is to balance this factor.
Amenability to Integration with Property Redevelopment Plans – will there be conflicts with proposed site uses or regional plans?	
Implementability – can they be achieved under applicable state and locals laws?	Acceptability to Stakeholders – stakeholders (i.e., regulatory agencies, businesses, utilities, residents, etc.) impacted by AUL/ICs need to understand the exposure assumptions, proposed controls, and how restrictions will be implemented over time. Consideration should be given to the concerns/limitations expressed by stakeholders.
Technical Practicability – if engineering controls are involved, will they help achieve or enhance objectives?	
Cost Prohibitiveness – are short- and long-term costs associated with implementing and maintaining controls prohibitive when compared to the cost of additional remediation or engineering controls?	Cost Effectiveness – is the proposed AUL/IC cost-effective, particularly over the long-term if there are extensive, on-going O&M requirements?

enforce an IC or any person whose interest, collateral, or liability in the property might be affected by its violation. At closed sites, there may also be previous or existing stakeholders that do not reliably oversee IC requirements and/or do not have enforcement authority via statute or contract. USEPA emphasizes that because of this complexity, it is critical that enough safeguards and overlaps are in place to protect human health and the environment.

Historically, one of the main problems with ICs has been the lack of tracking and enforcement. In general, common law principals are not supportive of negative restrictions, covenants and controls and therefore, organizations may not have the authority to oversee and enforce ICs. As a result, a patchwork of laws and regulations has been developed over the years by state and local governments to address ICs. Also, until recently there have not been tracking systems for reviewing and determining what ICs are associated with a given site. ICs may not be uncovered via a routine title or deed search, and there is no comprehensive national database capable of capturing ICs for all properties.

In 2005, the U.S. Government Accountability Office was requested to complete a study on the use of ICs at Superfund and RCRA sites and how they are implemented, monitored, and enforced. Their report underscored many of the existing problems associated with the effective use of ICs. Findings indicated that site documentation usually discussed IC objectives, but in many cases, it did not adequately address when the controls should be implemented, how long they would be needed, or who would be responsible for monitoring or enforcing them. They also concluded that USEPA faced challenges in ensuring that ICs can be enforced because some are informational in nature and do not legally limit or restrict use of the property. Also, it was found

that in some cases, state laws limit the options available to enforce ICs. These concerns call into question the reliability of previous ICs established at closed sites.

The Uniform Law Commission (also known as National Conference of Commissioners on Uniform State Laws - NCCUSL) has made an attempt to validate and standardize ICs, or as they refer to them “environmental covenants,” and has helped address some frequently encountered problems with ICs. In general, their mission is to provide states with non-partisan, well-conceived and well-drafted legislation that brings clarity and stability to critical areas of the law. Some states have formally incorporated ICs into their corrective action and voluntary cleanup programs, while others do not directly address them and may consider their use on a case-by-case basis. In 2003, the NCCUSL developed The Uniform Environmental Covenants Act (UECA), which is a model law available to the states that helps address some of the common law doctrines that have resulted in problems with IC enforceability.



The UECA applies traditional real estate law principles to environmental covenants to insure they will be preserved over the long term and be enforceable in accordance with their terms and conditions. For example, the UECA provides property owners that grant an environmental covenant with the right to enforce it and requires their consent prior to any termination or modification. This model law accounts for enforcement against successive owners of the property and against other parties liable for maintaining and

performing the duties identified in the IC. The existence of this framework has already assisted many states with adopting laws to address ICs. As of April 2008, 20 states, the District of Columbia and the U.S. Virgin Islands had enacted the UECA and another 21 states had either already introduced this as legislation or planned to do so in 2008 or 2009.

IC TRACKING AND MONITORING

Upon completion of remediation, “No Further Action” letters and other forms of liability protection are often granted contingent on maintaining the proposed site use and actively implementing ICs. If these requirements and obligations are not tracked and adhered to, some sites may be subject to regulatory re-openers requiring additional risk assessment and site investigation work. This has the potential to result in additional costs and legal claims. Further, damage to engineering controls may occur that renders active remediation systems, caps, etc. ineffective and results in new bodily injury and property damage claims. These concerns have resulted in an acknowledged need for better tracking and monitoring of ICs.

The aforementioned GAO study concluded in part that USEPA should 1) ensure that the frequency and scope of monitoring efforts are sufficient to maintain the effectiveness of ICs; and 2) ensure that the information on controls reported in new tracking systems accurately reflects actual conditions. USEPA concurred with these findings. USEPA subsequently incorporated appropriate controls into their CERCLA and RCRA cleanup programs and has recently begun implementing IC tracking systems to ensure their long-term effectiveness.

USEPA has announced a coordinated effort to promote the development of a voluntary network of individual local, state, tribal, federal, and industry tracking systems dedicated to promoting

stewardship of ICs. This network of independent systems will facilitate the coordinated collection, tracking, and sharing of accurate information about ICs across cleanup programs. USEPA committed to leading this effort via an internal workgroup comprised of representatives from each EPA cleanup program: Superfund, Brownfields, RCRA, Federal Facilities, Underground Storage Tanks, and EPA Enforcement (Office of Enforcement and Compliance Assurance, Office of General Council). External participants include other federal agencies, states, tribes, local agencies, industry and non-governmental organizations. Initial goals are to establish common IC tracking elements, tracking definitions, and standard data sharing protocols. USEPA is also working with the ICMA to continue to enhance the LUCs.org website as a resource for tracking information related to ICs.

Some states have also developed on-line databases where sites with ICs can be researched and identified. For example, the New Jersey Department of Environmental Protection (NJDEP) utilizes their Data Miner website via the Open Public Records Act to allow interested parties to locate information on ICs for a given site. This includes search features to identify sites where deed notices and classification exception areas have been established. (In general, NJDEP has been proactive with respect to ICs. On the front end, NJDEP has also developed tools to assist site managers with planning and developing proposals for remedial actions with ICs. They have developed guidance documents, checklists, and status reporting forms for ICs and even provide model wording for deed notices.)

ASTM has developed some guidelines and best



practices for AUL Tracking Systems, which are presented as an appendix to ASTM E2091-05. ASTM outlines minimum requirements for effective tracking and monitoring of AULs which include, but are not limited to:

- Site or Facility Identification/Location
- Chemicals of Concern
- Exposure Pathways Addressed
- Type of AUL (engineering and institutional)
- Entities Responsible for Enforcing
- Entities Responsible for Operations and Maintenance
- Reporting Requirements
- Duration of AUL

These key elements should be incorporated into any comprehensive tracking and monitoring system established for ICs and will allow users to more easily determine the details of ICs used at a given site.

Development of common definitions and forums for information exchange are important components in developing programs that effectively establish and implement ICs. Once established, the tracking systems, monitoring tools and enforcement mechanisms become critical tools in ensuring that ICs are being used as intended. In order to minimize pollution liabilities, previous and existing site owners and operators need to be sure that those responsible for maintaining ICs can be identified and are held accountable. Proper selection, implementation, tracking and enforcement of ICs will help minimize liability and claims for environmental professionals and site owners or operators.

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