

# Brownfields & Groundwater Remediation in Massachusetts

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*As you know by the 3<sup>rd</sup> presentation...*

Brownfield Programs facilitate the assessment,  
cleanup (if needed) & redevelopment of  
previously used properties

*What do we do – or do differently – in Massachusetts?*

*How does the protection of groundwater resources fit in?*



# Massachusetts Brownfields Incentives

## MassDevelopment

Brownfields Redevelopment Fund

- Brownfields Site Assessment Program
- Brownfields Remediation Loan Program
- Housing Initiative Loans
- Priority Project Status

## Massachusetts Office of Business Development

Brownfields Redevelopment Access to Capital (BRAC) Program:

- Insurance Premium Subsidies (up to 50%) & Quality Coverage

## Massachusetts Department of Revenue

Brownfields Tax Credit Program

## Office of the Attorney General

Brownfields Covenant Not to Sue Program



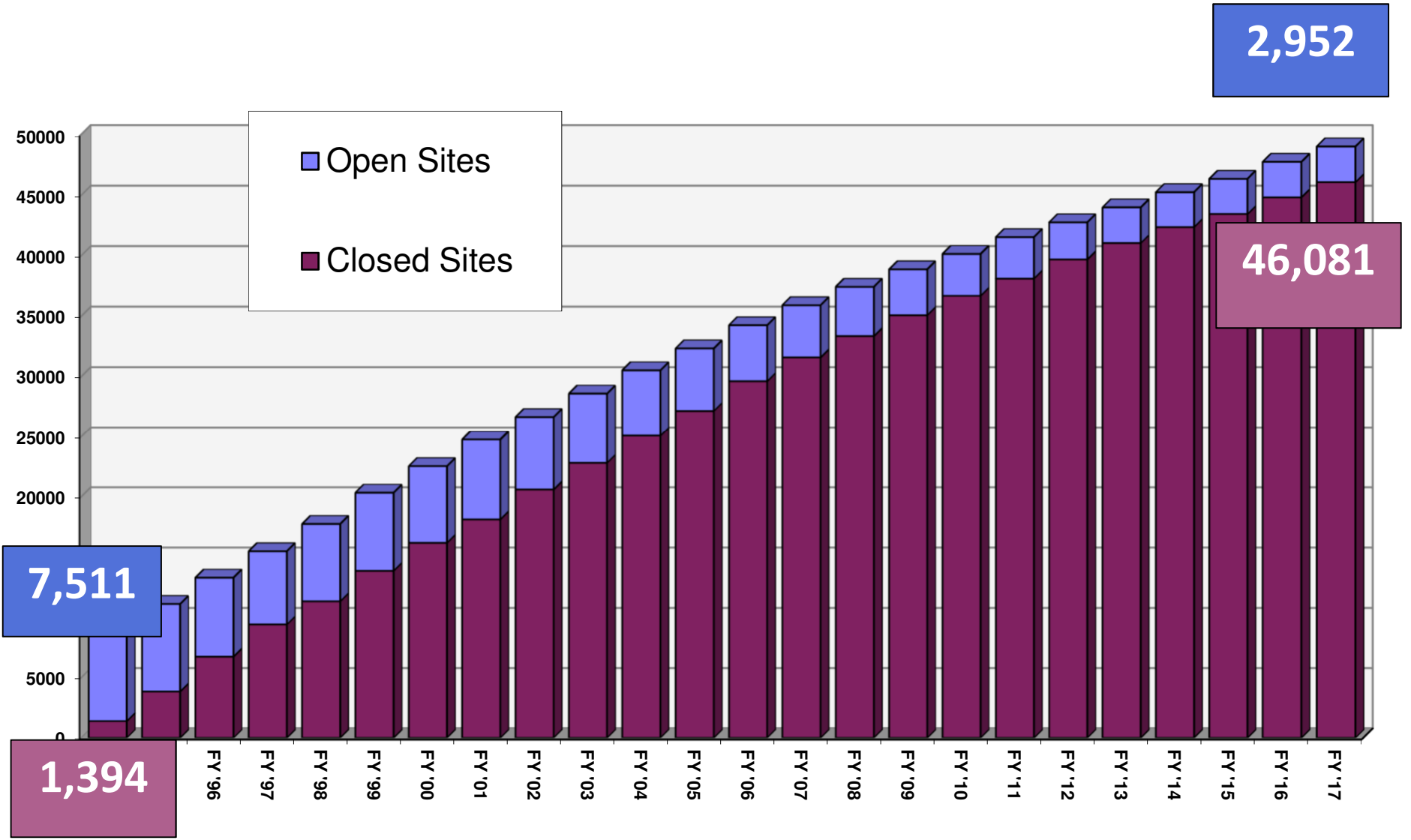
# Massachusetts Brownfields Incentives

## MassDEP Waste Site Cleanup Program

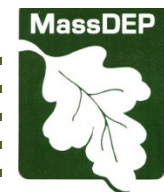
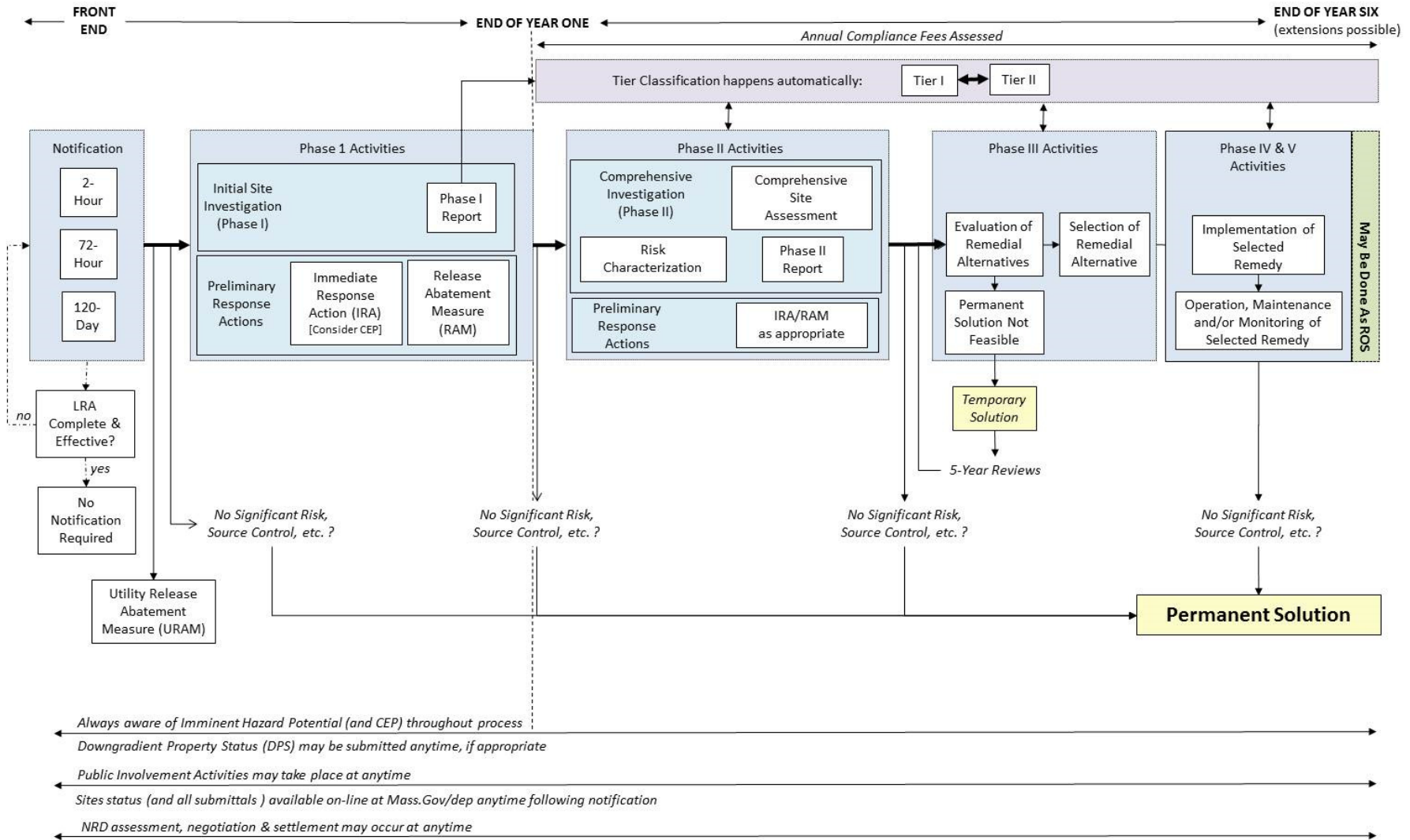
- **Semi-Privatized Cleanup:** private sector Licensed Site Professionals (LSPs) oversee assessment and cleanup work
- **Flexible Cleanup Standards:** risk-based cleanup standards take the planned reuse of the site into consideration during cleanup design
- **Technical Assistance:** MassDEP work with municipalities, non-profits and brownfield developers
- **Funding** (*when available*): MassDEP has received federal grants to conduct assessment work on behalf of eligible parties.



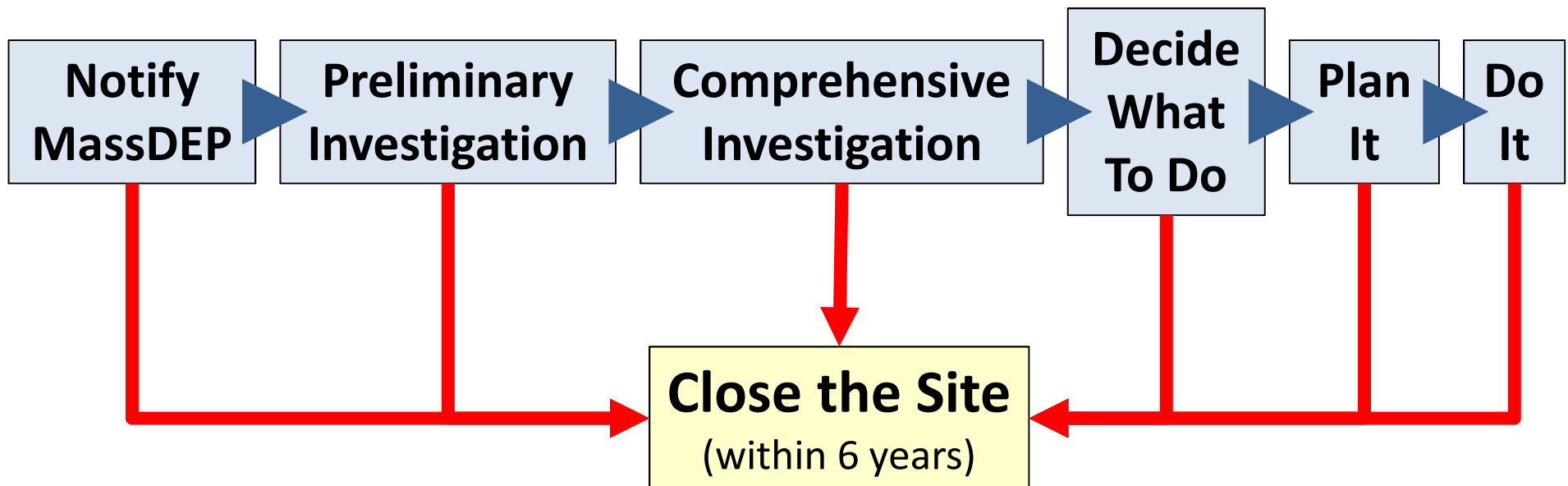
# 21E Site Universe FY1994 - 2017



# Streamlined MCP Process: Notification-to-Closure



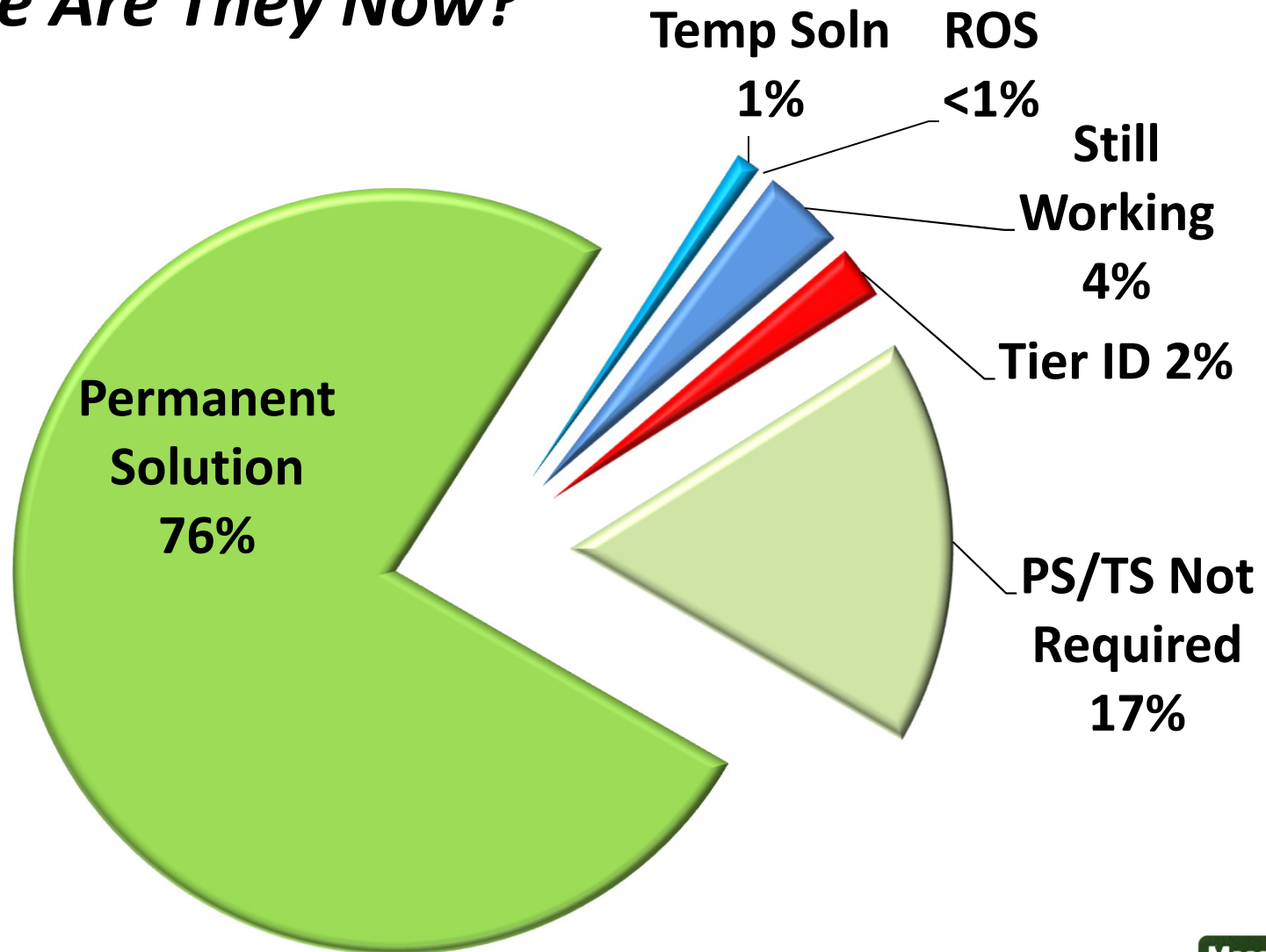
## REALLY Streamlined MCP Process: Notification-to-Closure



1. Hire a Licensed Site Professional (LSP)
2. Meet Performance Standards – *and document it.*
3. Pay Fees



1,326 FY11 Notifications (most recent 6-yr period):  
***Where Are They Now?***





# (Some) Implication of LSPs

ALL parties have to have confidence in their work

- Transparency (reports online 15 minutes after submittal)
- MassDEP audits work
  - to evaluate cleanup at a specific site
  - To evaluate the body of work of an LSP or PRP
  - To evaluate the overall effectiveness of the program

Cleanup rules have to be clear & consistent in the absence of constant & direct MassDEP oversight

- Detailed regulations
- Extensive guidance
- Requirement for MassDEP Continuing Education Credits



# GROUNDWATER RULES

## 3 Categories of Groundwater

- GW-1 – current or future use as drinking water
- GW-2 – potential source to indoor air (vapor intrusion)
- GW-3 – discharge to surface water

ALL groundwater is considered GW-3.

Groundwater at a site MAY ALSO BE GW-1 and/or GW-2.

Groundwater categorization rules are in regulation (310 CMR 40.0932)



# Brownfields & Groundwater

## Issues To Discuss

1. Ability (or inability) to use land use restrictions to affect groundwater category or potential exposures
  - CANNOT change GW-1 or GW-3 designation using restrictions
  - GW-2 category depends (in part) on presence of building (restrictions may be applied, but...)
2. What happens when...
  - Land changes as a result of a Brownfield project?
  - Potential risk changes as a result of new toxicity information? (e.g., trichloroethylene)



# Change in USEPA Toxicity Information

*Considered carcinogenic to humans but most sensitive endpoint is non-cancer health effects:*

- 2011 EPA released new “Reference Concentration” (RfC) of  $2 \mu\text{g}/\text{m}^3$
- $2 \mu\text{g}/\text{m}^3$  is safe for short- and long-term exposure
- RfC considers developmental effects (fetal cardiac malformations) that may occur *after only a few days exposure* during early pregnancy



# Changes in Toxicity => Changes in Levels of Concern for TCE In Indoor Air and Groundwater for POTENTIAL Imminent Hazards

(Residential)	Pre-2011	Current
Indoor Air	85 $\mu\text{g}/\text{m}^3$	6 $\mu\text{g}/\text{m}^3$
Groundwater	300 $\mu\text{g}/\text{L}$ pre-2006 50 $\mu\text{g}/\text{L}$ post-2006	5 $\mu\text{g}/\text{L}$
Health Effect	Long-term Cancer Risk	Short-term Developmental Effect



# Scope of the Potential Problem

- **~ 1,000(+/-) potential sites for initial screen**

Based on a database search for “TCE”,  
“trichloroethylene”, “chlorinated solvents”, etc. -  
NOT DEFINITIVE

- **~ 200 (+/-) identified for follow-up**

concentration of TCE in groundwater, proximity to  
receptors, etc

- **~25% (+/-) of follow-up results in addition response  
actions “worst sites” prioritized**



# MassDEP Review of Conditions at TCE Sites Closed Under Old Standards

- MassDEP contact current owners
- MassDEP can/will conduct initial sampling to determine if current conditions require further assessment or response actions
- Primary concern is identifying any potential for exposure and mitigating that exposure, NOT enforcement



# EXAMPLE:

- Site closed by former industrial owner
- Now commercial & residential
- Vapor intrusion & “Imminent Hazard” confirmed
- Sub-slab Depressurization System installed
  
- Monitoring well installed to evaluate potential impact to nearby buildings.
- TCE concentrations exceed the GW-2 standard
- Condo Association financially unable to install additional wells near residential buildings on adjacent street.
- MassDEP installed two driven wells to obtain VOC data and measure depth to groundwater.
- Results are pending.

