

## **Underground Piping and Tanks Initiative Semi-Annual Report – January 1, 2014**

(One of the Enhanced Inspection and Environmental Monitoring Initiatives)

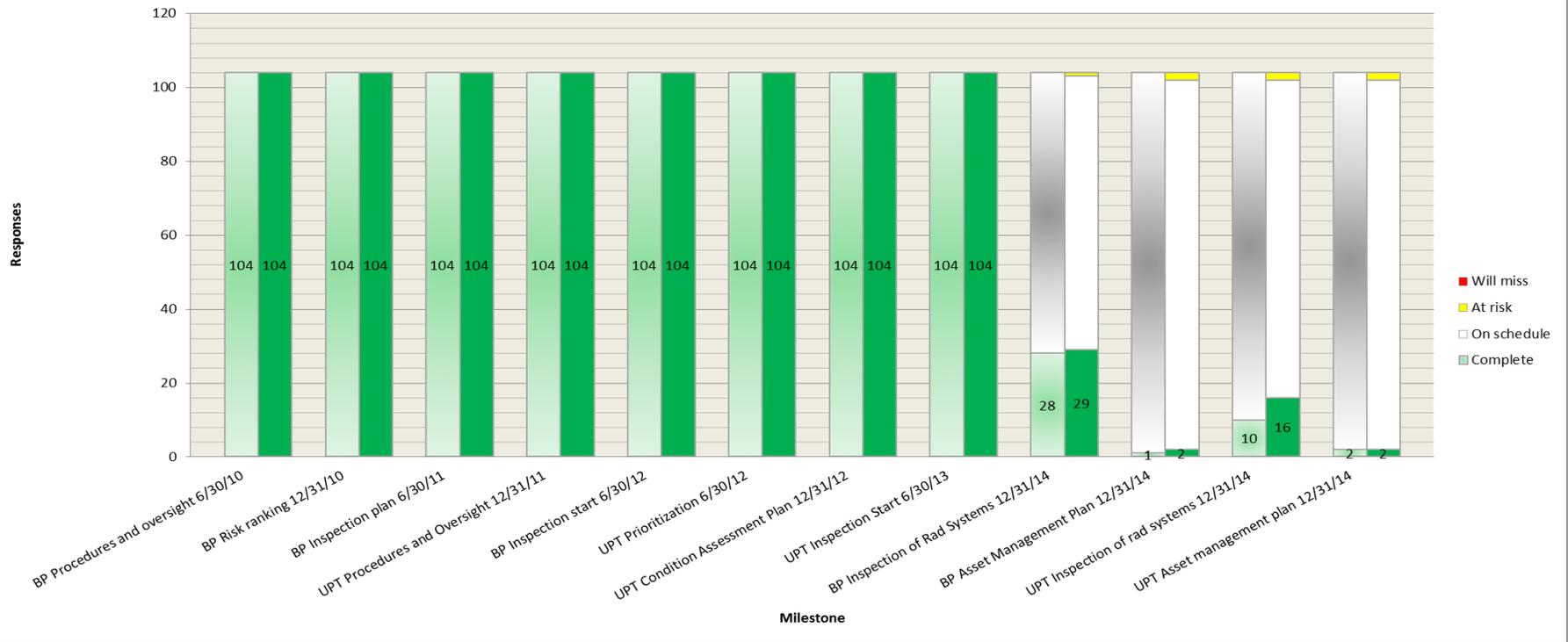
### **Background**

When NSIAC approved the Buried Piping Integrity Initiative in November 2009 and the Underground Piping and Tanks Integrity Initiative in September 2010, it asked for a semi-annual report on the Initiative status and related industry activities and efforts. Four areas were to be covered: milestone status, leakage trends, NDE development, and overall assessment. The December 31, 2013 status report follows.

### **Initiative Milestone Implementation Status**

The chart below captures the status of each of the 12 milestones included under the Underground Piping and Tanks Integrity Initiative revised as of December 31, 2013. The left bar in each pair shows that status from 6 months ago.

Status as of December 2013 (left bar in each pair is status from 6 months ago)

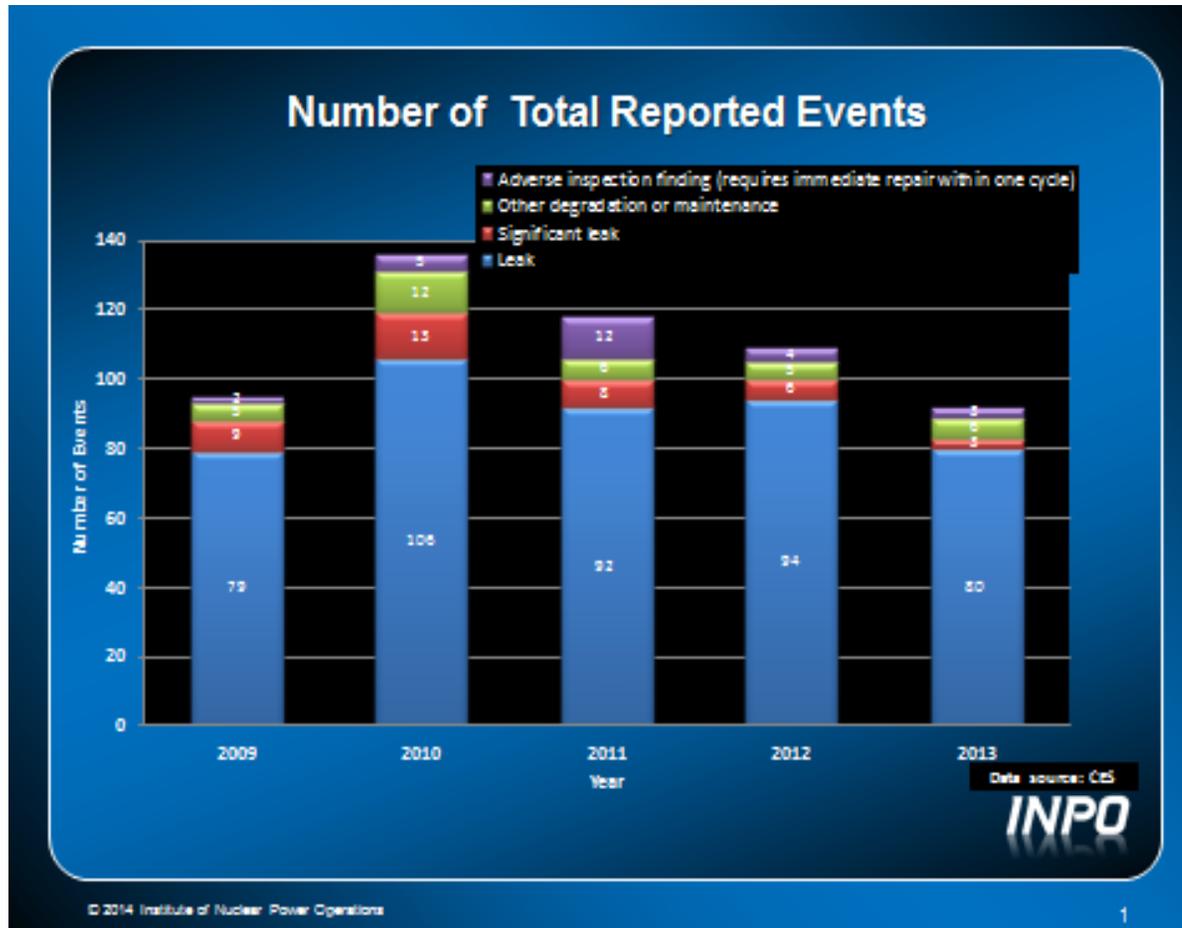


The following observations are offered on the above implementation status data:

- Acronyms: UPT = Underground Piping and Tanks Integrity Initiative, BP = Buried Piping Integrity Initiative
- Chart colors:
  - light or darker green=complete,
  - white or gray=on schedule,
  - yellow=at risk, and
  - red=will not meet
- As of December 31, 2013, all plants have completed the first eight milestones.
  - The plants that are identified as “at risk” have announced intentions, or have already ceased operations as part of the transition to decommissioning status.
  - Their plant status relative to the UPTI commitments is uncertain
- The applicability of the Underground Piping and Tanks Integrity Initiative to plants that are permanently shut down needs to be clarified. See the more detailed discussion at the end of this update under Buried Piping Integrity Task Force observations.

## Trends: Leakage and Adverse Inspection Findings

The following chart provides general information on leaks and adverse inspection findings that have been reported to INPO through their ICES/EPIX system. The charts reflect data received through December 2013. This information was provided by INPO using data from the EPIX (now ICES) system.

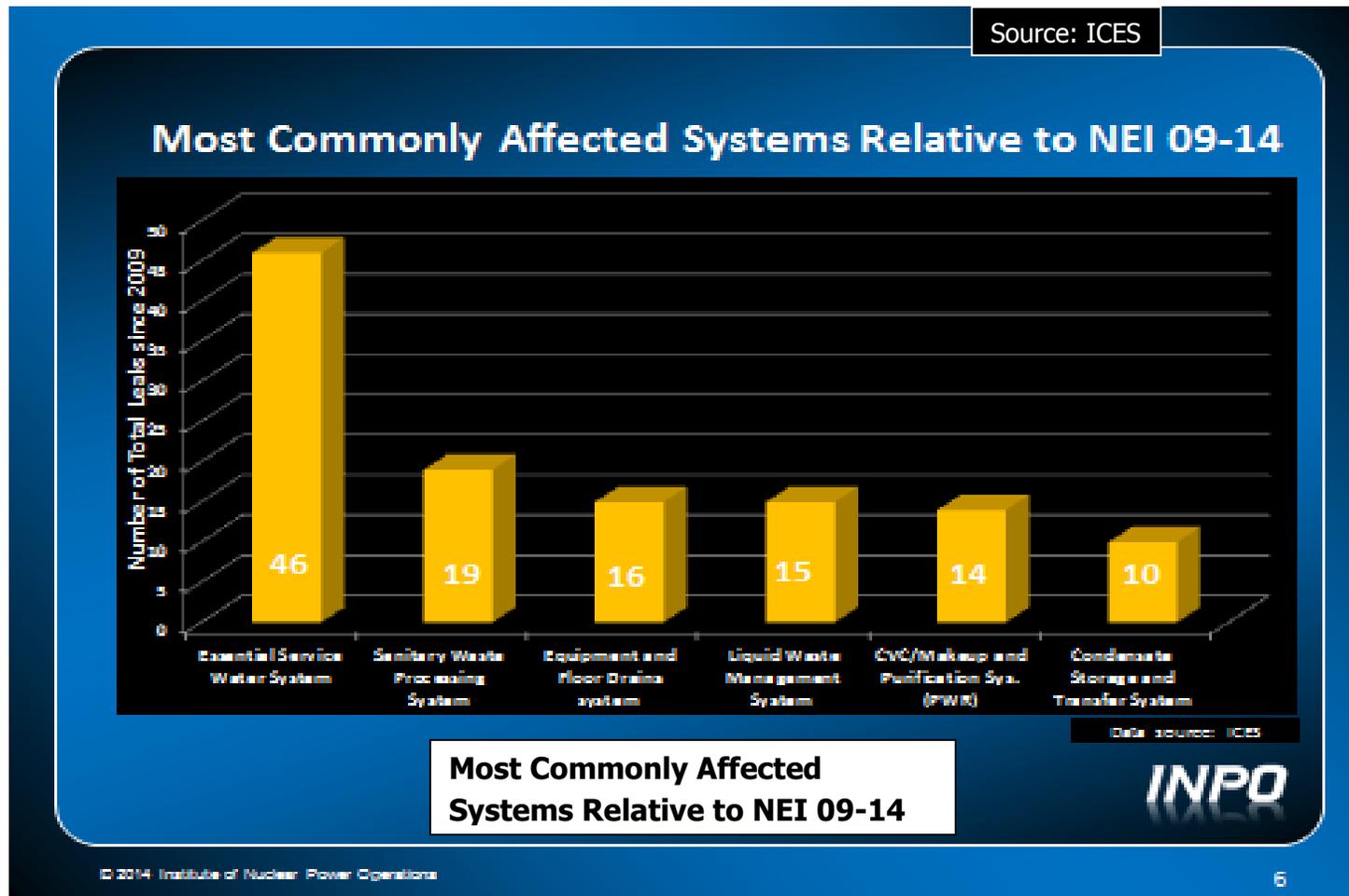


The following observations are offered on the chart to the left:

- Significant leaks are those that exceed NRC or EPA limits, are reportable under the Ground water Protection Initiative, or result in a system or component being out of service.
- The data shows a decline in reported leaks. This may be due to remediation efforts and installation or attention to cathodic protection systems.
- The number of reported inspection findings has varied over time since all of the inspections and necessary repairs have not been completed and we may be seeing an “inspection transient”. Furthermore, the data report lags the actual inspection completion so data from earlier years may not reflect all the findings.
- Additional years of data will be necessary to declare a definite trend.

## Trends: Most Commonly affected Systems

The chart below (also from INPO's ICES system) illustrates the systems most often affected by the "events" trended on the chart on the previous page. The trending (relative to systems affected) has not changed significantly since we started to collect this data. Essential Service Water leaks are the most common leak reported followed by sanitary waste processing and equipment and floor drain systems.

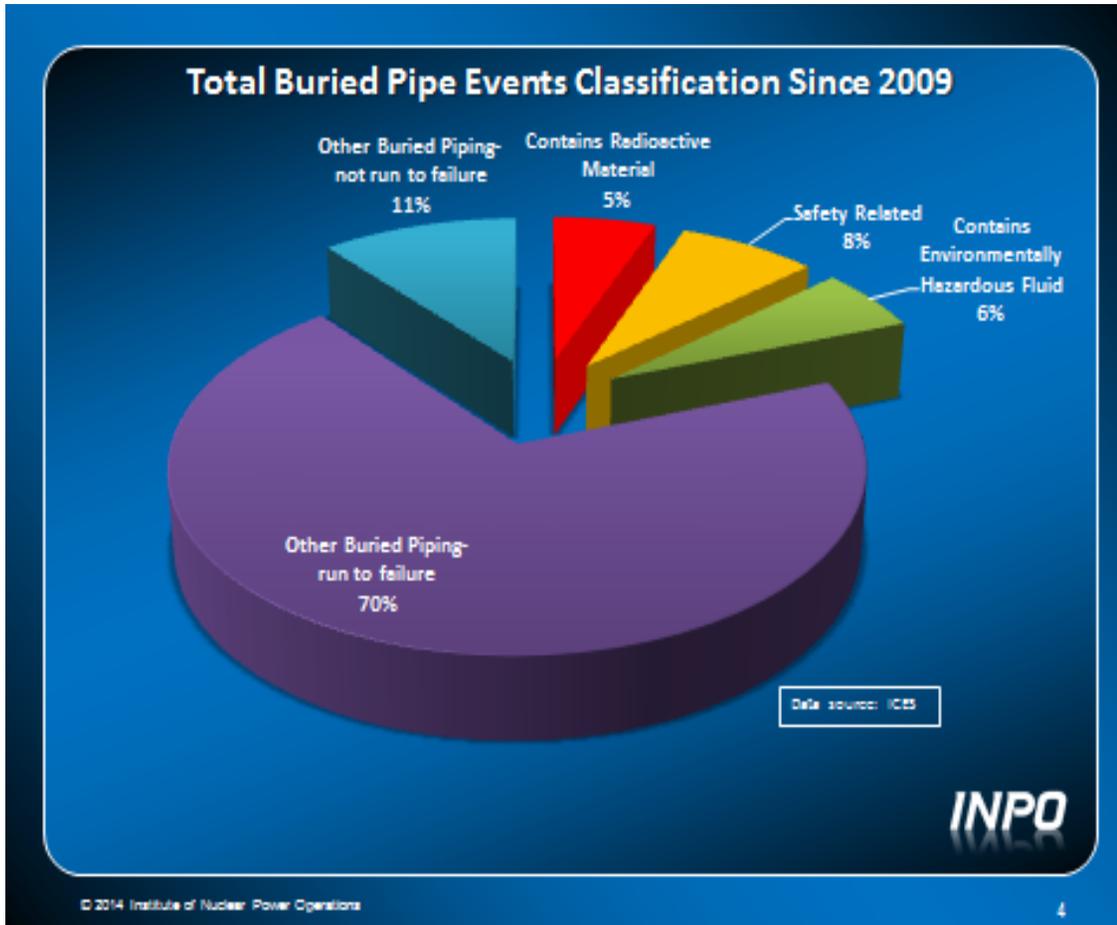


The following observations are offered on the chart to the left:

- This data shows all the leaks that have occurred since we started collecting data in 2009.
- We will continue to collect data on all systems, even those not in the scope of the Initiative, so we can observe trends more accurately.

## Classification of Buried Piping Events

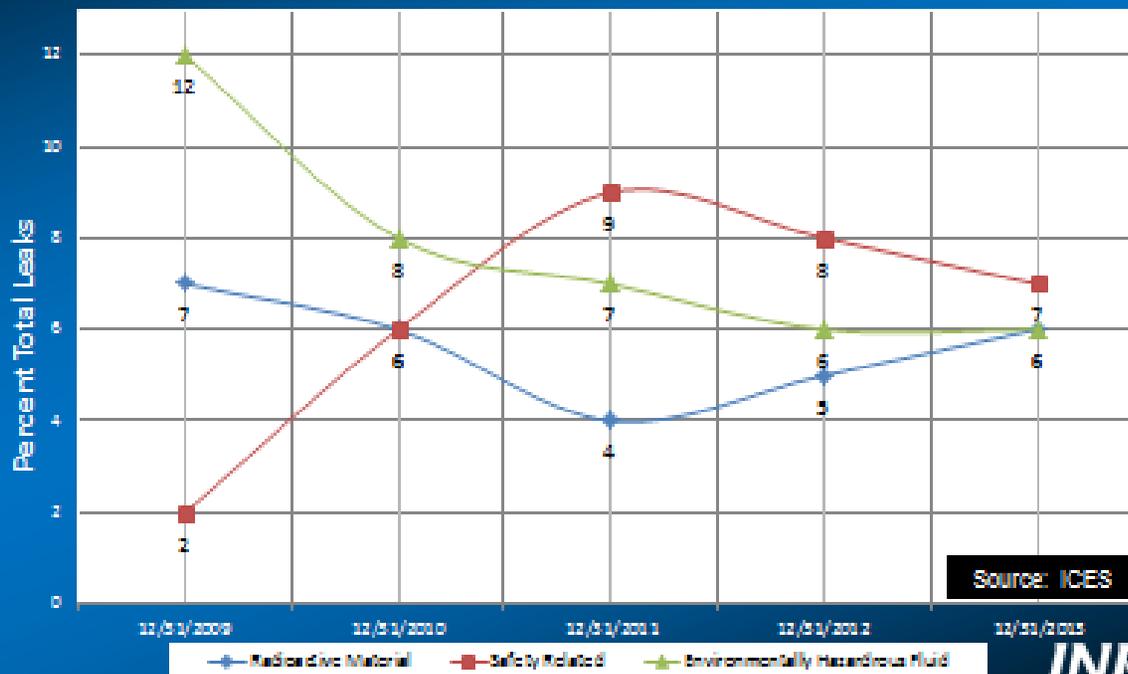
The chart below provides general information on piping that has leaked or experienced adverse inspection findings at plants based on all reports to date (the majority of the data is from events after 2009). This information was provided by INPO using data from their ICES system.



The following observations are offered on the data in this chart:

- Plants characterize systems differently; especially which systems are “run to failure”. This different characterization makes interpretation of this data imprecise, but general observations are possible.
- The majority of buried and underground piping degradation is occurring on low risk or “run to failure” systems.
- About 19% of the piping degradation has been on piping that is within the scope of the Initiative (safety related, or contains radioactive or environmentally hazardous (sensitive) materials).
- The relative percentages shown in the chart have not changed significantly since the industry began reporting the data.

## Percent of Total Leaks Reported by Year



The overall percentage of total leaks that have been attributed to systems containing radioactive material, environmentally hazardous material and/or are safety-related has consistently been around 20%.

## NDE Technology Update

- EPRI assessed/benchmarked four additional in-line pipe NDE inspection technologies in EPRI piping mock-ups. The industry appears to be using in-line inspection technology more in order to increase inspection volume and decrease site excavations. Results published in report: Nondestructive Evaluation; Assessment and Development of Buried Pipe NDE Technology (3002000463).
- EPRI published a guided wave data analysis method that can be used to improve the reliability of buried pipe inspection results. EPRI, through BPITF, is working to increase the level of credit that NRC gives the industry for license renewal and NEI 09-14 guided wave inspections. Feedback from the NRC has thus far been positive. Results published in report; Obtaining Credit for Guided Wave as a Buried Pipe Direct Examination (3002000468).
- Additional 2013 UPT published NDE research results:
  - Nondestructive Evaluation: Buried Pipe Guided Wave Analysis Tools (3002000466)
  - Nondestructive Evaluation: NDE for Tanks and Containment Liners (3002000462)
  - Nondestructive Evaluation: High-Density Polyethylene NDE Technology (3002000439)
  - Nondestructive Evaluation: Buried Pipe NDE Reference Guide—Revision 2, Addendum 1 (3002000447)
- EPRI has 10 UPT NDE projects planned for 2014 which focus on development, assessment, and implementation of NDE technologies such as ultrasonics, guided wave, and electromagnetic.

## Buried Piping Integrity Task Force Observations and Recommendations

- In order to maintain the regulatory credibility we have achieved by this Initiative, it is important that the remaining milestones be met by all utilities. Several plants that have made the decision to transition to a decommissioned status are at risk for completing the December 2014 milestones. This is attributed to the need for clarification on the applicability of the UPTI to plants in transition to decommissioned status
- There are no major new observations on leakage trends or Initiative implementation this period.
- The NRC remains interested in the progress being made by EPRI in the development of guided wave inspection technology. Currently guided wave can only be used as screening tool to look for the existence of degradation. The NRC is receptive to the possibility of using guided wave as an evaluation tool and is pleased that the work continues. It is important to keep the focus and necessary funding applied to development of improved inspection technology.
- The Buried Piping Integrity Task Force has undertaken various ways to understand overall implementation of Initiative by the industry, so that any conditions that might appear to be contrary to initiative intent can be understood within the context of overall status.
  - INPO is summarizing their evaluation results in more detail and the results are being reviewed by the task force at least twice a year.
  - The semi-annual EPRI Buried Piping Integrity Group (BPIG) meetings provide a venue for buried piping program owners to exchange information and operating experience and seek advice on problems. Any significant insights identified at these meetings will be evaluated by the Buried Piping Integrity Initiative Task Force (BPITF) at one of its periodic calls.
  - The recent revision to the Underground Piping and Tanks Integrity Initiative guideline (NEI 09-14) increased the emphasis on utility reporting of significant new OE to the BPITF.
- INPO ICES software has been updated to include Operating Experience information for in-scope tanks. Tanks became in-scope as of January 1, 2012. Tank Operating Experience information must be entered in ICES, retroactive to January 1, 2012.
- The applicability of the Underground Piping and Tanks Integrity Initiative (UPTI) to plants in transition to decommissioned and permanent shutdown status must be clarified. The Initiative as initially proposed and subsequently revised is not specific on applicability; however it has been assumed that it would be applicable to all plants that were operating at the time of its approval. Since the Initiative was last revised in January 2013, 4 plants have been permanently shut down and questions have arisen regarding whether the UPTI should still be applicable to them.

The January 2013 revision to the UPTI focused its scope on piping and tanks that are safety related or that contain licensed or environmentally hazardous materials. With this scope in mind, additional considerations apply to a permanently shut down plant.

The Buried Piping Integrity and Decommissioning Task Forces have developed draft guidance that recommends that licensees of plants that have certified permanent removal of fuel from the Reactor Vessel, via 10CFR50.82 (a)(1)(ii), should complete the following to end that plant's commitment to the UPTM:

1. Drain all underground piping containing licensed or environmentally hazardous material.
2. Drain all underground tanks containing licensed or environmentally hazardous material.
3. Ensure that positive controls are in place to prohibit the reintroduction of licensed or environmentally hazardous into the drained piping and underground tanks.
4. Enter into the plants record keeping system the details of items 1, 2, and 3 above in a manner that is retrievable to future stakeholders.
5. Submit to the NSIAC Chairman, a letter documenting the above actions. (The Chairman should include a short discussion period of this on the NSIAC agenda at an upcoming meeting.)

In addition, in cases where it is not possible to drain licensed or environmentally hazardous material from the underground piping and/or tanks, a reduced scope UPTM Program should be used to ensure pipe and tank integrity remain ensured. Leakage from piping and tanks that contain licensed material will be monitored by the Ground Water Protection Initiative, which remains applicable to shutdown plants. Environmental regulations will continue to govern components that contain environmentally hazardous materials. This recommendation is expected to be formalized prior to the next 6-month status update.

**Contact:** Mark Richter (202-739-8106; [mar@nei.org](mailto:mar@nei.org))