



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 7**

11201 Renner Boulevard  
Lenexa, Kansas 66219

**MAR 10 2016**

Mr. Les Turilli  
Meramec Cavern Enterprises, Inc.  
1135 Highway W  
Sullivan, Missouri 63080

Dear Mr. Turilli:

Thank you for meeting last week with representatives of the U.S. Environmental Protection Agency, the U.S. Geological Survey, the Missouri Department of Natural Resources, the Missouri Office of the Attorney General, and TRW. All parties in attendance agreed on the importance of working together to take swift action to reduce the levels of airborne trichloroethylene (TCE) contamination found in Meramec Caverns below a level of health concern. The purpose of this letter is to summarize what steps were agreed to in that meeting and in subsequent discussions which are necessary to ensure protection of public health.

TRW has committed to finance and perform numerous actions, under EPA oversight and with MCE's cooperation, to reduce the levels of TCE contamination in air within Meramec Caverns below a level of health concern. These actions are detailed in Enclosure A and are important steps that we all agree need to be quickly implemented and then monitored for effectiveness. The EPA will continue to press TRW to implement the mitigation measures as quickly as possible.

Full implementation of these measures will take several months. Historical sampling data consistently shows marked increases in the level of TCE contamination within the cavern as outdoor temperatures rise. The sampling results also show that TCE levels detected in the cavern present an unacceptable threat to workers and may pose a threat to visitors. Most recently the ATSDR recommended that exposures to these levels of TCE be stopped.

Based on historical data trends and recommendations from ATSDR, and as we agreed in our telephone conversations today, Meramec Caverns agrees to temporarily suspend cave tours. As we agreed, this temporary suspension of cave tours is a prudent measure in the best interest of protecting the health of your workers and guests.

As discussed with you, based on the most recent sampling results, the gift shop and restaurant area may remain open. The sliding glass doors at the cave entrance shall remain closed (except for the purpose of performing the required actions detailed in Enclosure A) in order to minimize infiltration of air from the cave into the gift shop and restaurant area. The EPA will work with you to expeditiously evaluate the effectiveness of the actions being taken to reduce concentrations of TCE in the cave.



In addition, the EPA agrees to continue the action-oriented dialogue we have established with you, ATSDR, state agencies, and TRW. We remain open to exploring additional solutions (air cleaner, reduced tours, etc.) that might allow for some form of tours to resume while the longer term mitigation measures are implemented. Those measures must demonstrate consistent ability to reduce levels of airborne TCE.

While we can make no assurances at this time about whether or when tours can resume, we will make our staff available to work with you to consider fair and sound approaches for addressing health concerns through a combination of mitigation measures and changed operations. We will contact you soon to arrange for another joint meeting to pursue solutions to this public health issue.

In the interest of transparency, we plan to develop a website where the public can access historical data, health related documents published by the ATSDR and the Missouri Department of Health and Senior Services, and work plans for actions to be conducted at the cave.

If you have any questions regarding this letter, please contact Tonya Howell at [Howell.tonya@epa.gov](mailto:Howell.tonya@epa.gov) or Lynn Juett at [Juett.lynn@epa.gov](mailto:Juett.lynn@epa.gov).

We would like to acknowledge the cooperation you have demonstrated to date in addressing the TCE exposures in the cave. We will rely on that continued cooperation and a shared interest in protecting the health of your workers and guests as we work to resolve this matter.

Sincerely,



Mary P. Peterson  
Director  
Superfund Division

Enclosure

cc: Spencer Williams, ATSDR  
Dennis Stinson, MDNR  
Jonathan Garoutte, MDHSS  
Robert Bleazard, TRW  
Jason Flower, Husch Blackwell  
Kirk Marty, Shook, Hardy & Bacon

## Enclosure A

### Mitigation Actions – March 4, 2016

- 1) **Installation of permanent airlock doors**  
Materials for installing the doors have been ordered and they will be installed as soon as the materials arrive (before the end of March). Doors will include a mechanical system to make sure they are not open at the same time and a digital logging system to document when they are open/closed.
- 2) **Improvement of the seals in the front of the building**  
This work will be done immediately after the airlock doors are installed.
- 3) **Evaluation of widening the amphitheater**  
Initial evaluation on whether or not this is needed will be conducted by the end of March. If determined not to be needed now, it will be reevaluated after the installation of the vent shaft if more air flow is necessary.
- 4) **Evaluation of widening the escape route corridor**  
Same as number 3 above.
- 5) **Installation of borehole ventilation behind the Jungle Room**
- 6) **Evaluation of the HVAC system**  
A second evaluation by a different HVAC team than was used last year. The evaluation is being conducted this month, to determine if positive pressure can be established, that would effectively separate the cave air from the gift shop air.
- 7) **Replacement of TCE laden water with clean water for cave maintenance**
- 8) **Air barrier determination in Atomic Passage**  
If needed, a set of airlock doors will be installed to block air with TCE from entering the utilized portions of the cavern. This will be determined after the installation of the ventilation shaft.
- 9) **TRW will be taking over ambient air monitoring on May 1, 2016.**
- 10) **TRW has agreed to conduct personal air monitoring of tour guides once the ventilation shaft is up and operating.**
- 11) **Other things that were discussed as possible beneficial actions included:**
  - a) **The use of air cleaners on a temporary basis**
  - b) **Replacement of existing sliding glass doors in gift shop with airlock doors or a revolving door that would incorporate positive pressure**  
To be evaluated as part of the HVAC evaluation.
  - c) **Installation of an airlock door before the wine room**  
This would help control moisture in the forward portion of the cave.