

# WASTEWATER EVAPORATORS AS AFFF MITIGATION STRATEGY AT FIREFIGHTING TRAINING FACILITIES

## PROJECT OVERVIEW

The per- and polyfluoroalkyl substances (PFAS) used in aqueous film forming foams (AFFF) are an environmental priority issue due to environmental persistence and suspected human health effects. Although PFAS are presently categorized as “contaminants of emerging concern”, the DoD policies are restrictive. Current DoD policy prohibits PFAS-based foams for firefighter training unless effluent is fully contained and disposed of appropriately, though legacy training pits will deal with contaminated wastewater long after PFAS-based foams are phased out. Any PFAS contaminated water or material is classified as hazardous waste. Since residues of the legacy-type AFFF are present throughout training pits and storage ponds, all water introduced to the system, becomes part of the HazMat waste stream. Effective thermal evaporation approaches will be demonstrated and validated to limit waste volume, and needs for expensive off-site treatments.

## BENEFITS

The disposal controls and costs limit training, ultimately risking DoD facilities and assets. Additionally, in areas of high rainfall, disposal costs of firepit water from rainfall can greatly exceed training disposal costs. At Tyndall, for example, the fire pit accumulates 750,000 gallons of rainwater in an average year. Thermal evaporation can reduce wastewater volume dramatically (more than 10-fold) providing corresponding decrease in disposal costs. An effective and economical waste management strategy supports resumption of the firefighter training mission. The engineered practice also demonstrates proactive and responsible stewardship of operating sites and resources.

## PATH FORWARD

The completed field tests and demonstration will provide strategy to mitigate environmental and mission burdens due to AFFF-laden wastewater at fire fighter training sites. The system design provides a modular platform, amenable to rapid installation and start up. The results will guide determination of commercial evaporator system requirements and operation for treating training effluent. Documentation will support the transition (and scaling) of technology application to other DoD and civilian sites.

### DoD Executive Agent

Office of the Assistant Secretary of the Army for Installations, Energy, and Environment

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Firefighter training using AFFF fire suppression agent (Tyndall AFB)

## Conventional Treatment

The principal method applied by the DoD for PFAS treatment is high-temperature incineration. The approach has an extreme logistic and financial burden, especially when considering the enormous volume of dilute waste that accumulates at typical training sites.



Incinerator in East Liverpool, OH licensed to burn the DoD's PFAS-contaminated material (C&E News Feb 2020)



Pair of pilot scale thermal evaporators installed at the Silver Flag training site (Tyndall AFB)

## AFFF Wastewater Evaporation

The demonstration will evaluate and validate the application of industrial evaporation for a representative firefighter training site waste stream. The assessment will include waste at various contaminant complexities and strengths in order to rigorously assess approach and devise treatment regimen. The methodology is designed to define efficiency and efficacy of thermal evaporation processes at mission-relevant scale.

## FOR FURTHER INFORMATION

National Defense Center for Energy and Environment  
<http://www.denix.osd.mil/ndcee/home>  
 US Air Force Civil Engineering Center  
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