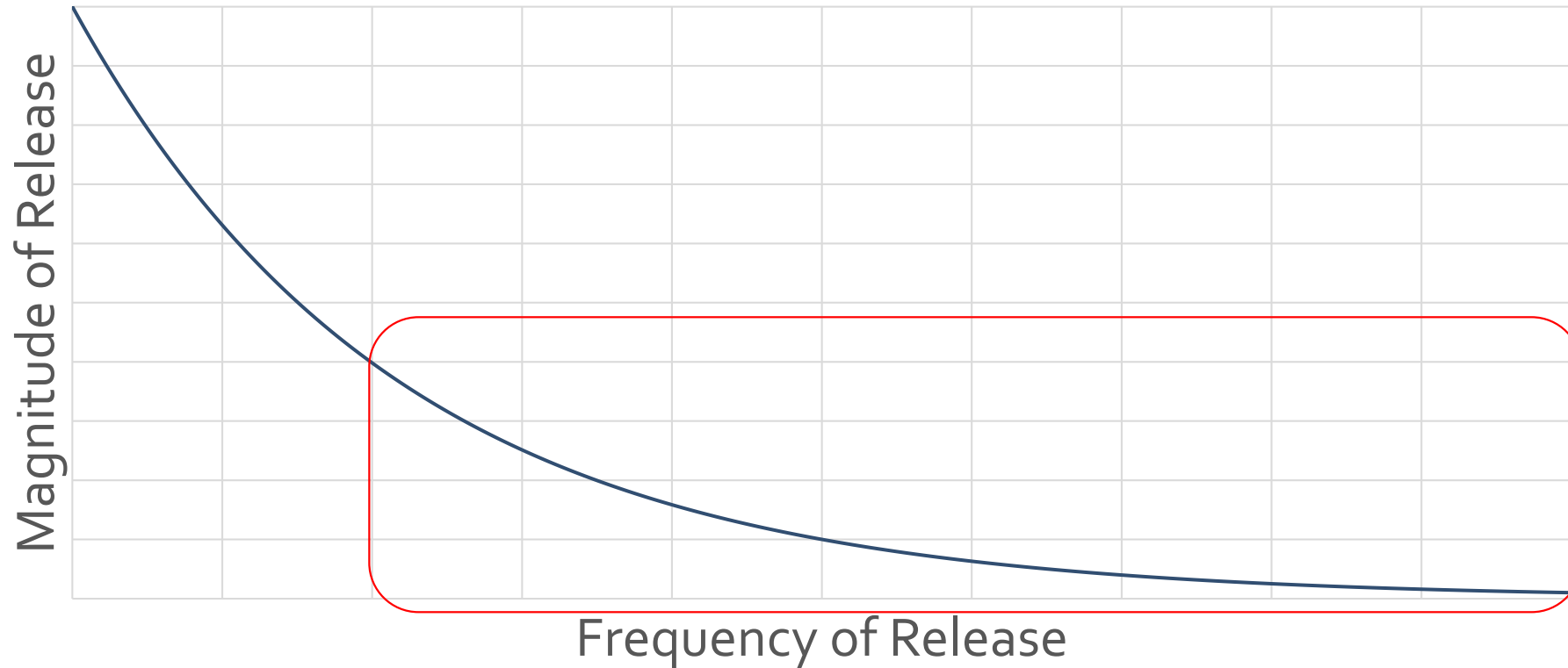


# How to Address Frequent, Small Volume Releases



October 25, 2017

EPA's Natural Gas STAR and Methane Challenge Annual Implementation Workshop

Doug Sahm, PE – President and CTO, TPE Midstream



Z E V A C<sup>®</sup>



# TPE MIDSTREAM CAPABILITIES & SERVICES

“The Only Thing That Is  
Constant Is Change ”

Why purchase equipment and lock yourself in?  
TPE Midstream gives you the flexibility and  
lets you respond with equipment that fits your  
system as it grows and moves.

- **SHORT TERM RENTAL**
  - TPE Midstream operates the largest fleet of high pressure temporary launchers, receivers, filters, separators, flares, and pipe in the industry
  - On-demand response with local inventory
  - Equipment always in stock – we can draw on our international inventory
- **LONG TERM LEASE**
  - An alternative to capital expenditure, TPE Midstream can lease equipment to you when you need it, and trade it out when your operation changes.
  - Annual lease or multi-year lease for maximum value.
  - Bulk lease discounts
- **FLEET MANAGEMENT**
  - TPE Midstream can keep a fleet of equipment field-ready for your systems. A well maintained mobile fleet in place of redundant permanent assets avoids inefficient equipment purchases.
- **EQUIPMENT SALES**
  - If permanent assets is the best solution for your operation, TPE Midstream can fabricate a wide variety of equipment.
  - Complete packages.
  - Turn-key fabrication.
  - Engineering services.





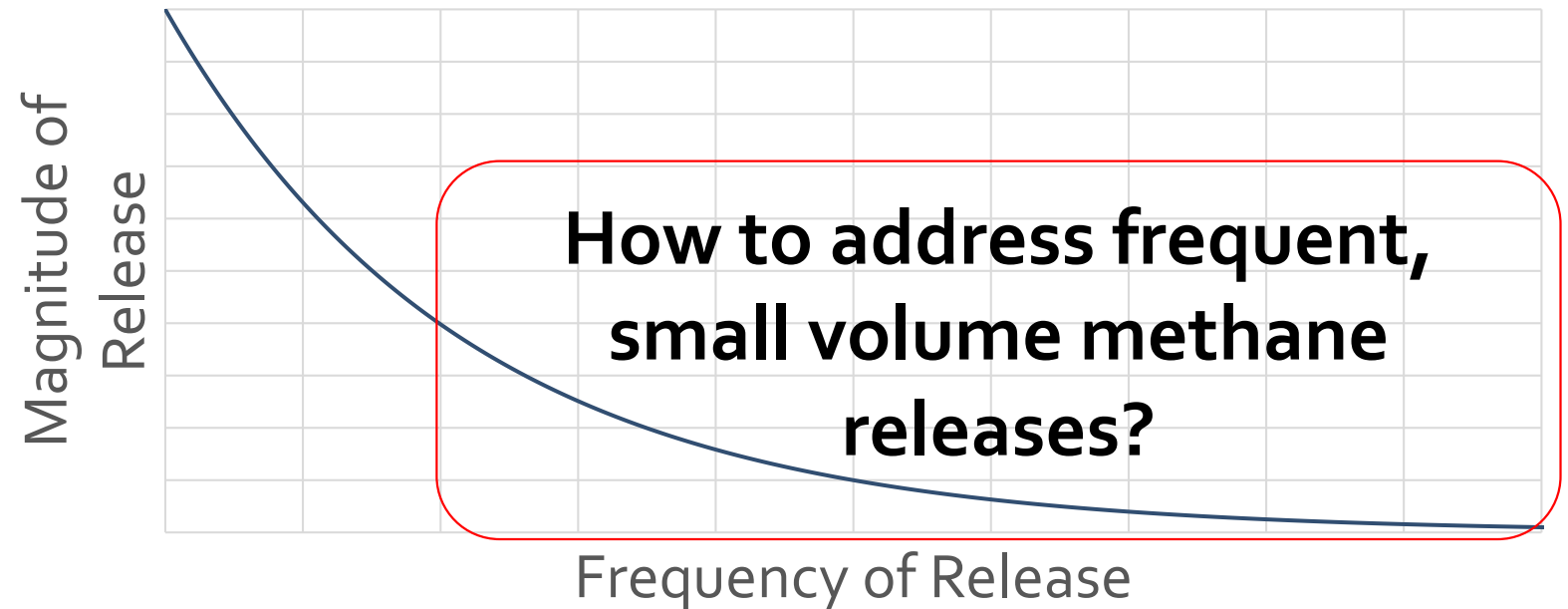
How much is too much?

## Large Releases

- Reduce Volume
  - Reduce Pressure
  - Flaring
- PROJECTS will be PLANNED
    - Emissions Considered
    - Emissions Minimized
    - Permitted and Reported

## Hand-on-Valve Releases

- ???
  - ???
  - ???
- UNPLANNED Maintenance
  - ROUTINE Maintenance
  - ROUTINE Operations





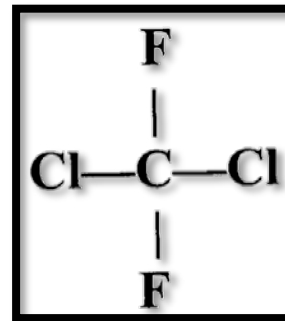
## SAFETY TRIANGLE



BEHAVIORAL  
PROCEDURAL  
RIGHT-TOOL  
ENGINEERED CONTROLS

EVERY EMPLOYEE IS PREPARED TO DO HIS/HER JOB SAFELY

## REFRIGERANTS



EVERY EMPLOYEE IS EQUIPPED TO DO HIS/HER JOB WITHOUT EMISSIONS

EXAMPLES  
“High Frequency,  
Low Magnitude  
Events”

“Quality means doing it right  
when no one is looking” ~Henry  
Ford



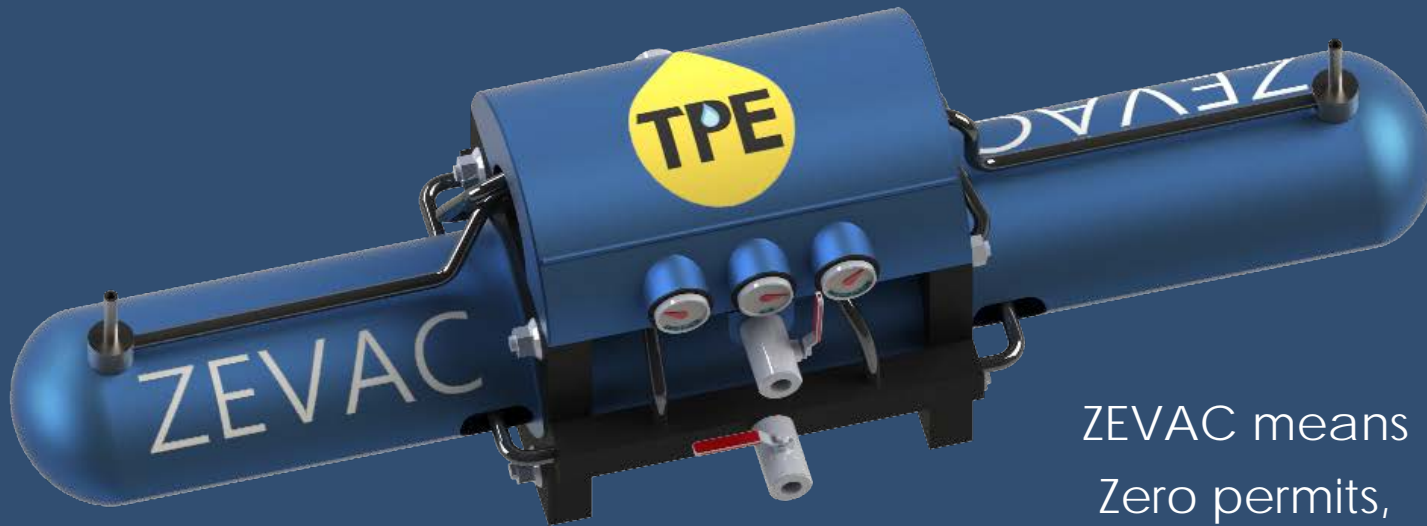
Z E V A C<sup>®</sup>

Zero Venting.

Zero Flaring.

Zero Emissions.

TPE Midstream ZEVAC™ units use compressed air to suction your process vessel or pipeline segment, and compresses the gas into the adjacent pipeline.



ZEVAC means  
Zero permits,  
Zero spark hazards,  
Zero greenhouse gases released.

ZERO  
EMISSION  
VACUUM  
AND  
COMPRESSOR



PATH to  
**E-free**  
Every Day

**1. Identify**

Job roles and Activities that involve venting or flaring

**2. Develop**

Emission-less Alternative Operational Procedure (A.O.P.)

**3. Train**

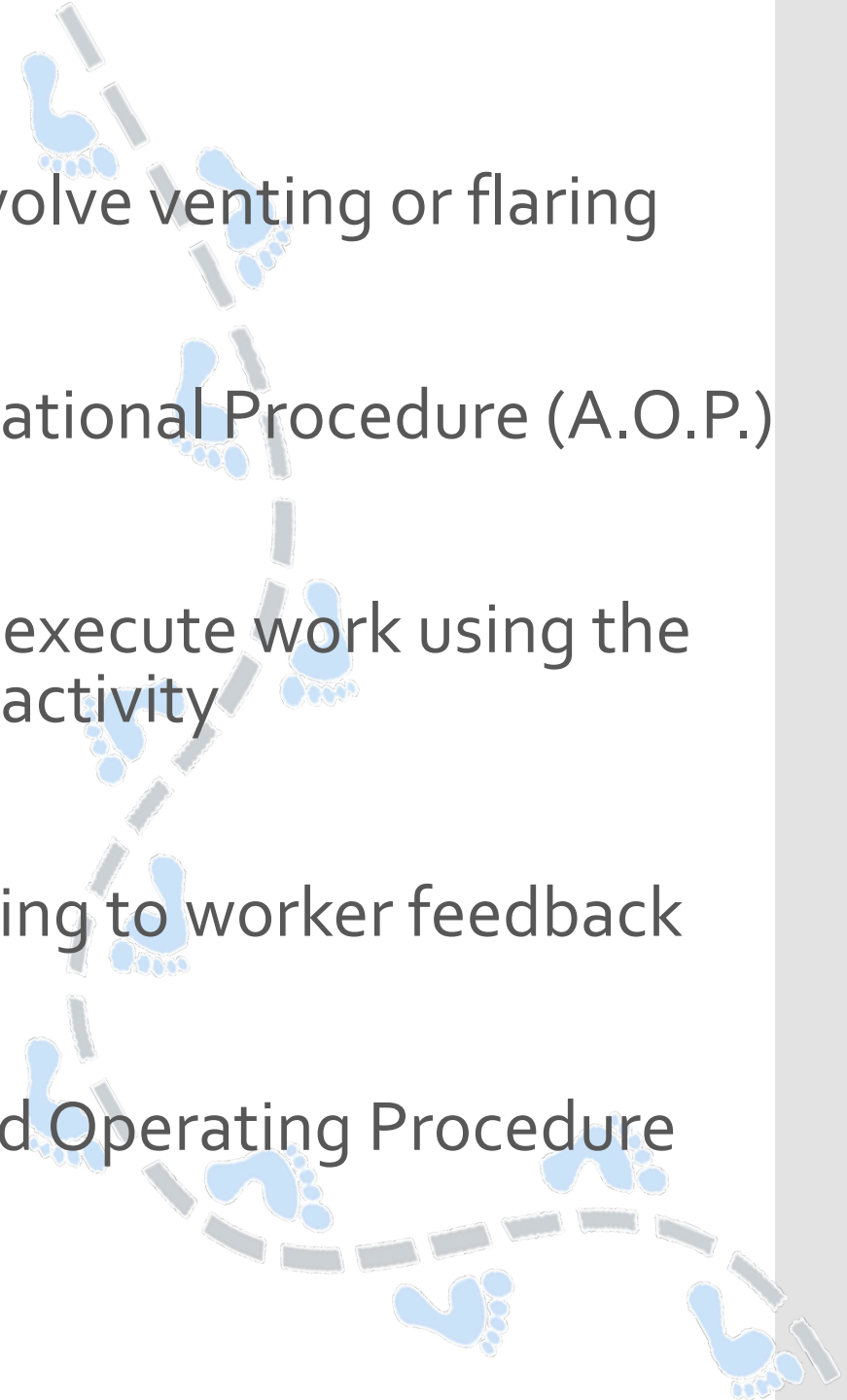
Employees and Contractors to execute work using the Emission-less version of job or activity

**4. Evaluate**

E-free A.O.P. and revise according to worker feedback

**5. Deploy**

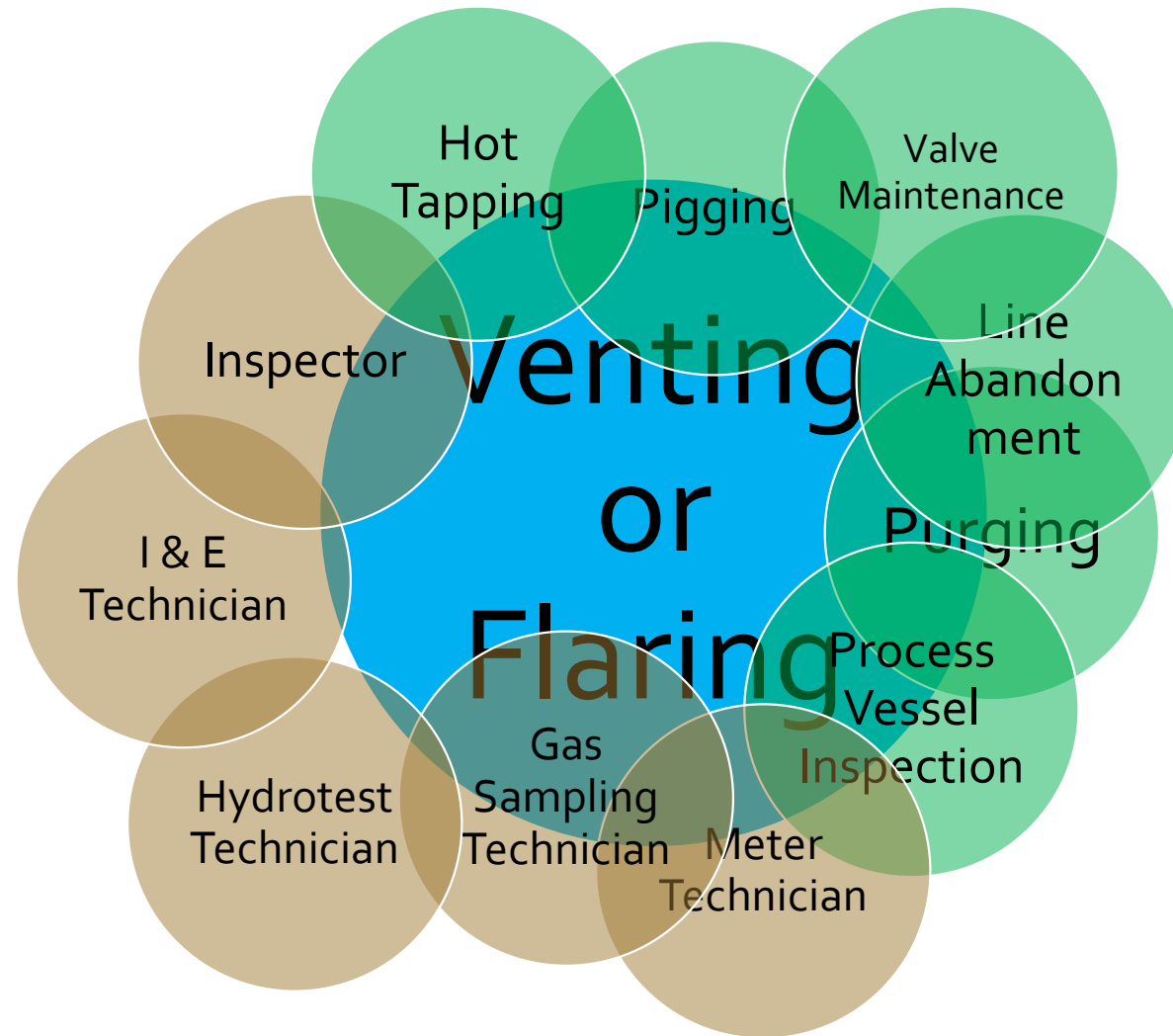
Roll-out Emission-less Standard Operating Procedure  
A.O.P. → S.O.P.





# 1. Identify

Job roles and Activities that involve venting or flaring



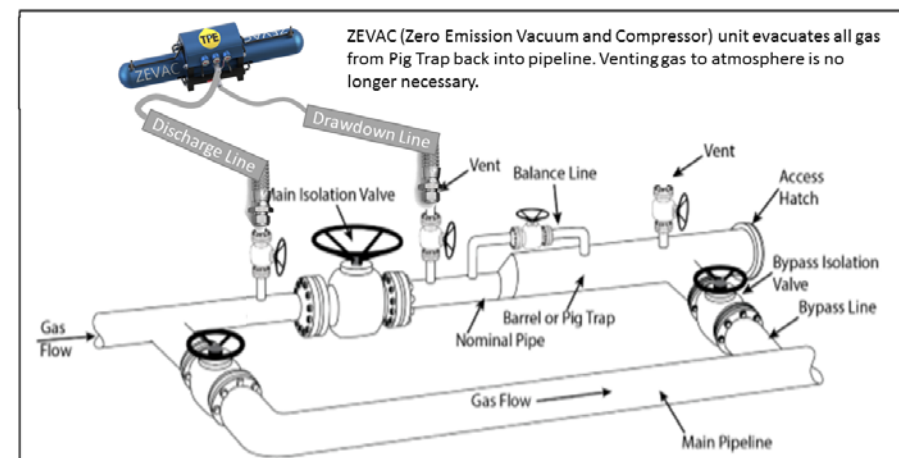
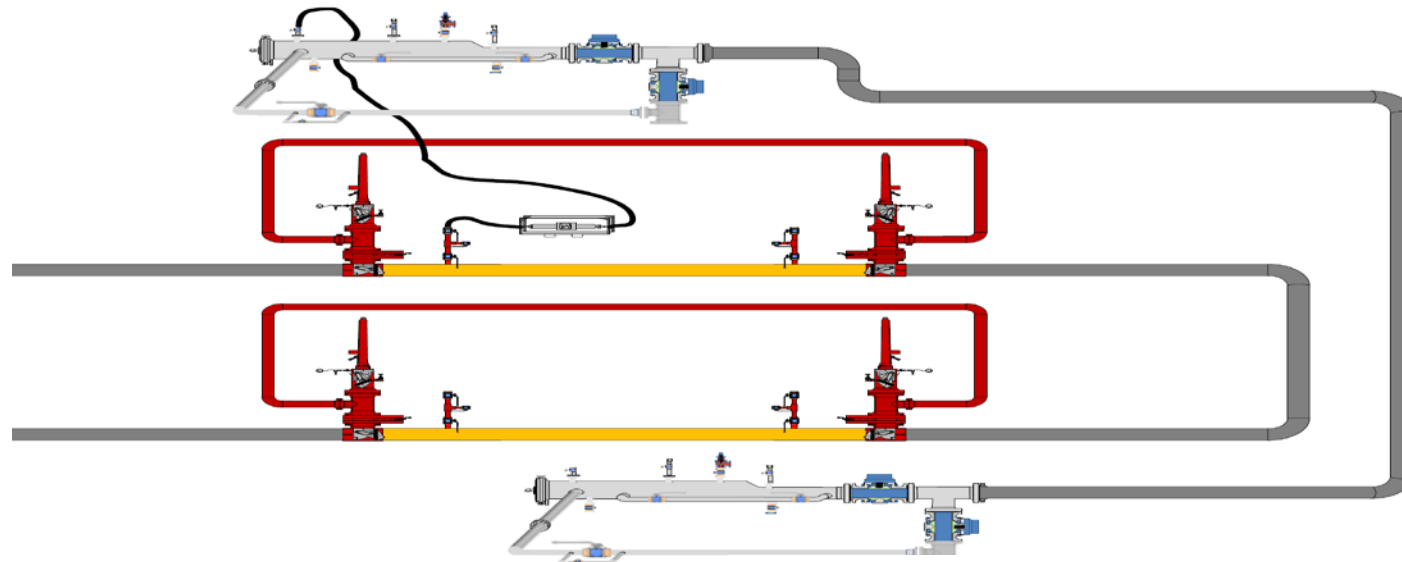
PRIORITIZE



## 2. Develop

# Emission-less Operational Procedure

WRITE  
ZEVAC PROCEDURES



Modified Figure 1: Drawing of a barrel type design of a pig launcher and receiver equipped with ZEVAC controlled depressurization.





### 3. Train

Employees and Contractors to execute work using the Emission-less version of job or activity



TRAIN  
ZEVAC PROCEDURES

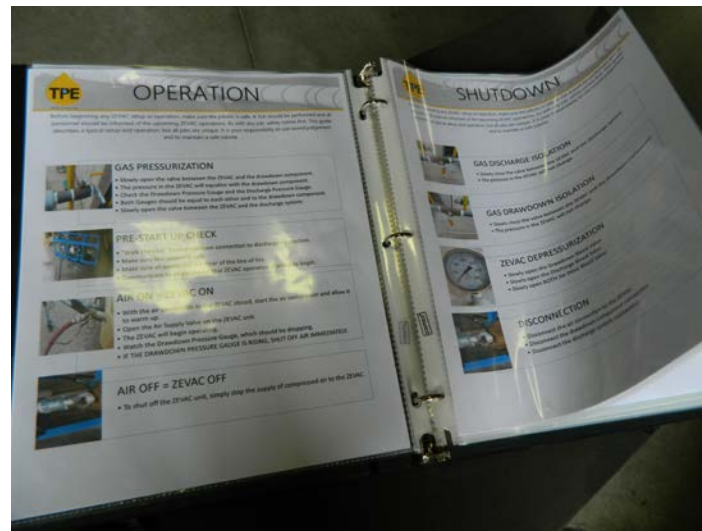




# 4. Evaluate

E-free A.O.P. and revise according to worker feedback

EVALUATE  
ZEVAC PROCEDURES





## 5. Deploy

Roll-out Emission-less Standard Operating Procedure

A.O.P. → S.O.P.

“This project has the potential to result in the emission of natural gas to the atmosphere. Proposals that reduce or eliminate this emission will be given consideration accordingly.”



“This work shall be performed in accordance with SOP# 12345, which details the use of emissions mitigation technology.”

DEPLOY  
ZEVAC PROCEDURES



## CASE #1 – Mobile Flare Replacement

Wet Gas Gathering → Daily Pigging to clear liquids from lines

High VOC of liquids in pig barrels → Status Quo – use 15+ Mobile Flares Daily

ZEVAC

Technician Truck-mounted ZEVAC®

Connect to Pigging Launcher/Receiver and Line Vent

Move Gas (and liquids) to depressurize Barrel

Vent when under 10 psi (reporting threshold on locations)

Cost Equivalent to Flares, Operational & Safety Advantages

## CASE #2 – Utility Maintenance

Urban Utility → Daily maintenance, line replacements, etc.

High Public awareness of odors → Status Quo – File notifications, permits, etc.

ZEVAC

Technician Truck-mounted and trailer mounted ZEVAC®

Move Gas (and liquids) to depressurize line without odor release

Purge with Nitrogen (achieve True-Zero emissions)

Cost Advantage compared to permit & notification process

# EXAMPLES



# RESULTS



## SAFETY

- Flares (flame, heat, flashback) and Venting (flammable vapor cloud) introduce hazards to the jobsite. Avoid both by using ZEVAC®.



## ENVIRONMENT

- ZEVAC® prevents methane emissions, a greenhouse gas far more potent than CO<sub>2</sub>.



## PERMITS & NOTIFICATIONS

- Permits cost money, but they also cost time. Project delays and waiting for permits can be completely avoided. With ZEVAC®, no emission means no permits required.



## PRODUCT

- Releasing or burning product is a waste. ZEVAC® moves the product from one place to another, and ZEVAC® keeps 100% of the gas product contained in the system.



## OPERATIONS

- Operators and contractors need flexibility so that schedules can be maintained. Having ZEVAC® on-call allows operations planning that allows projects that wouldn't be possible by moving gas as needed.



## BEST PRACTICE

- Avoid intentional venting and flaring whenever practical. With ZEVAC®, you can execute best practice and avoid emissions, permit delays, and cost all with one simple, air-powered unit.



# ZEVAC<sup>®</sup>

Zero Venting. Zero Flaring. Zero Emissions.



Zero  
Emission  
Vacuum  
And  
Compressor



ZEVAC<sup>®</sup> uses compressed air to move gas products. Intake from a pipeline or vessel being depressurized and discharge back into your pressurized piping system eliminating the need to vent or flare. ZEVAC<sup>®</sup> eliminates the noise, permits, notifications, hazards, and difficulties of venting and flaring.

SAFER THAN FLARING OR VENTING  
ENVIRONMENTALLY RESPONSIBLE  
SOCIALY FRIENDLY

1-855-ZEVAC-GO

OPPORTUNITY IDENTIFICATION

EMISSION PRIORITIZATION PLANNING

DRAWDOWN SERVICES

RENTAL EQUIPMENT

LEASED EQUIPMENT

ENGINEERING SUPPORT

PROCEDURE DEVELOPMENT SUPPORT

TRAINING

SPECIAL/CUSTOM APPLICATIONS

GET STARTED



## ONGOING CASE STUDIES

- We are looking for case study partners with the following:
  - Field Crews who vent pig launchers, receivers, filters daily
  - Facility Operators who routinely vent vessels or small segments
  - Pipeline Operators who vent/flare pipeline segments regularly
  - Hot tapping contractors who can install suction & discharge points
- Our 2017-2018 Case Study Program:
  - TPE Midstream will put ZEVAC® units on 1 year lease to partner
  - Partner will commit to using ZEVAC® wherever practical
  - TPE Midstream will train partner personnel
  - Partner will give feedback and assist TPE in data collection



# EMPLOYEES ARE EQUIPPED TO DO THEIR JOB SAFELY AND EMISSION-FREE

FUTURE, TODAY







## QUESTIONS

Please contact me at any time regarding ZEVAC® opportunities

Doug Sahm, PE

TPE Midstream

[Rental@TPEMidstream.com](mailto:Rental@TPEMidstream.com)

1-855-ZEVAC-GO

Or visit [www.TPEMidstream.com](http://www.TPEMidstream.com) for more information