

The logo for Midland Resource Recovery (MRRR) features the letters 'MRRR' in a large, bold, orange font with a black outline. The letters are slightly shadowed, giving them a 3D appearance. Below the letters, the words 'MIDLAND RESOURCE' and 'RECOVERY' are stacked in a smaller, black, sans-serif font. The 'RECOVERY' text is contained within a black rectangular box.

**MIDLAND RESOURCE
RECOVERY**

ODORIZATION EQUIPMENT DECOMMISSIONING

2024 WGMSC – APRIL 29-MAY 2, 2024

WESLEY LUCAS – SALES DIRECTOR

DECOMMISSIONING OF OBSOLETE ODORIZERS

- REASONS FOR DECOMMISSIONING
- **PROCESS**, CRADLE TO GRAVE
- **WASTE HANDLING** (CLASSIFICATION, TRANSPORTATION, INCINERATION)
- **RESIDUAL ODORANT HANDLING**, (REUSE VS. DISPOSAL)
- 4 CASE STUDIES

WHY DECOMMISSION AND DISPOSE?

NATURAL GAS INDUSTRY IS A FAST GROWING SEGMENT OF OUR ENERGY INDUSTRY AND THERE IS A NEED TO KEEP THE OPERATIONS SAFE AND ENVIRONMENTALLY FRIENDLY. OBSOLETE ODORIZATION EQUIPMENT NEEDS TO BE REMOVED AND DISPOSED OF IN AN ENVIRONMENTALLY SOUND AND ODOR-FREE MANNER IN ORDER TO AVOID BUSINESS DISRUPTION OR POTENTIAL LIQUID/VAPOR ODORANT LEAKS FROM OBSOLETE EQUIPMENT.

DRIVERS:

- MODERNIZATION DUE TO AGING EQUIPMENT
- UPGRADE TO MORE RELIABLE/PRECISE EQUIPMENT
- CHANGING NATURAL GAS ODORIZATION REQUIREMENTS (POPULATION DENSITY, RECORD KEEPING)
- ABANDONMENT
- MAINTENANCE OF ODORIZATION EQUIPMENT
- UNDERGROUND TANKS
- ODORIZER FAILURES
- EXPIRATION OF DOT TANKS

EQUIPMENT

❑ PINHOLE ON A TANK WELD - NEW TANK

❑ LEAKS USUALLY OCCUR OUTSIDE THE SECONDARY CONTAINMENT.

❑ LEAKS OCCUR AT GASKETS, CORRODED TOP TANK ENTRIES, LINE COUPLINGS, ODORANT FILTERS AND PUMPS.

❑ LEAK ON A WELD - NEW ODORIZER



EQUIPMENT FAILURE

- ❑ A WORKING TANK RARELY LEAKS
- ❑ LEAKS USUALLY OCCUR OUTSIDE THE SECONDARY CONTAINMENT.
- ❑ LEAKS OCCUR AT GASKETS, CORRODED TOP TANK ENTRIES, LINE COUPLINGS, ODORANT FILTERS AND PUMPS.



CORRODED TOP ENTRIES



CORRODED ODORANT TANKS



AGING OF TANKS (DOT CERTIFICATION EXPIRED)



REMOVAL OF UNDERGROUND SWEEP OR BULK TANKS



UNDERGROUND STORAGE VESSELS (UST)...

TANK AGE: WITH AN AVERAGE NON-LEAKING LIFESPAN OF ABOUT 15-17 YEARS (U.S. EPA 1986), MANY OF THE TANK SYSTEMS (TANKS PLUS PIPING) THAT WERE INSTALLED DURING THE GROWTH DECADES OF THE 1950S AND '60S HAVE NOW REACHED OR EXCEEDED THE END OF THEIR SERVICEABLE LIVES.

UNDERGROUND ODORANT TANKS WERE USED MOSTLY BECAUSE OF TEMPERATURE CONTROL OF ODORANT. (SEEP TANKS OR STORAGE TANKS)

LIABILITY: AS AN INCREASING NUMBER OF COURT CASES HAS SHOWN, TANK OWNERS REMAIN FINANCIALLY LIABLE FOR DAMAGES RESULTING FROM SPILLS OR RELEASES FROM THEIR FACILITIES. LIABILITY IS REDUCED OR OFTEN ELIMINATED IF TANKS ARE REMOVED AND PROPERLY DISPOSED OF OFF-SITE.

STATION SHUTDOWN



Unsafe installation



UNSAFE INSTALLATION ADDITIONAL EXAMPLES



Switch from bypass to injection



Switch from bypass to injection



DECOMMISSIONING STEPS

1. ISOLATE SYSTEM FROM LIVE GAS
2. DEPRESSURIZE
 - FLARE, IF ALLOWED, OR FILTER
3. EMPTY THE TANK COMPLETELY
 - INSERT DIP TUBE ALL THE WAY TO THE BOTTOM OF THE TANK
 - FILTER/TRANSFER (1ST CHOICE) OR DISPOSE OF ODORANT
4. EXCAVATE TANK (IF UNDERGROUND)
 - BACK-HOE OR HYDRO-VAC
5. REMOVE TANK AND SEND FOR THERMO-CHEMICAL TREATMENT TO DESTROY RESIDUAL MERCAPTAN.
6. AFTER TREATMENT, METAL IS SCRAPED AND RECYCLED

Decommissioning at Client's Site

Isolate - Depressurize - Excavate - Filter & Transfer - Prepare for transport

Transport to WV

- Use of leak-proof container
- MRR takes ownership of contaminated materials

Incineration of
waste odorant by
HAZMAT waste
disposal facility

Treatment at MRR Facility

Proprietary Molecular destruction

Process gases
(Scrubber)

Metal recycling

Waste Handling

Hazardous odorant liquid waste is RCRA (Resource Conservation and Recovery Act) classified and must be;

- 1) "manifested", that is, accompanied by an EPA document that verifies proper transport and disposal;
- 2) transported only by a company in possession of an EPA identification number;
- 3) treated and disposed of only at a facility also specifically permitted for hazardous waste management.

Comprehensive Emergency Response, Compensation, and Liability Act (CERCLA, or Superfund), holds:

- 1) tank owners, as the "generators" of the waste,
- 2) They are responsible for any environmental damage caused by toxic residues

WASTE HANDLING

ODORANT TANKS FREE OF LIQUID, DEPRESSURIZED, UNDER INERT GAS ARE TRANSPORTED AS NON-HAZARDOUS MATERIALS.

OTHER MERCAPTAN CONTAMINATED MATERIALS (PUMPS, PIPING, ETC) ARE TRANSPORTED AS NON-HAZARDOUS MATERIALS IN DOT DRUMS.

OPTION TO TRANSPORT ALL MATERIAL IN SEALED CONTAINERS

Residual odorant can be drummed off for disposal/incineration or it can be filtered for reuse and transported as product to an alternate site or tank.



USE ONLY APPROPRIATE EQUIPMENT FOR ODORANT TRANSPORT





CASE 1: DECOMMISSIONING OF 2000 GALLON TANK















CASE 2: ON SITE TREATMENT OF AN UNDERGROUND TANK











TRANSPORTATION OF CUT UP TANKS TO PHILIPPI, WV TREATMENT CENTER



ON SITE TREATMENT ADDITIONAL EXAMPLE



ON SITE TREATMENT ADDITIONAL EXAMPLE



CASE 3: DECOMMISSIONING OF UNDERGROUND 1675 GALLON ODORANT STORAGE TANK



Obstacles with tank:

- Buried tank close proximity to building – hydrovac excavation was necessary
- Buried electrical lines above tank
- Removal of residual odorant



Hydrovac excavation





Hydrovac excavation



Draining odorant from the tank





The lift



Cut - ready for recycle

ANOTHER HYDROVAC EXAMPLE – UNKNOWN VOLUME TANK SAME CLIENT



Obstacles with tank:

- Tank volume unknown
- Not on any drawings
- Residual odorant volume unknown



Obstacles with tank:

- Tank volume unknown
- Not on any drawings
- Residual odorant volume unknown



The lift

LOADING



CASE 4: DECOMMISSIONING OF 2000 GALLON TANK AND PULSAFEEDER SYSTEM



Problems with tank:

- Leaky Level Gauge
- Mechanical Arm of Level Gauge interfering with Radar Level Gauge
- Bottom Feed Tank
- Porous Secondary Containment

CASE 4: DECOMMISSIONING OF 2000 GALLON TANK AND PULSAFEEDER SYSTEM CONT.



Problems with pump:

- Cavitation with variable gas flow
- Many connections – potential leaks
- Home made controls – lack of uniformity

INSTALLED A TEMPORARY STATION AND BULK ODORANT TANK





PLACED NEW TANK INTO BUILDING



INSTALLATION/STARTUP AND TRANSPORTATION OF DECOMMISSIONED MATERIALS TO WV TREATMENT CENTER



OTHER CONSIDERATIONS

- DO NOT TAKE ODORANT TANKS OR ODORANT CONTAMINATED MATERIALS TO A DUMP OR SCRAP YARD.



- PROTECT ODORANT CONTAMINATED FROM THIEVES
- DO NOT TRY TO DO MORE THAN WHAT YOU ARE TRAINED OR CAPABLE OF DOING. CALL IN THE EXPERTS.

SPECIAL DECOMMISSIONING TOOLS

- CARBON FILTER



- FLARE



- DIP TUBE



- MERCAPTAN NEUTRALIZER
 - ODOR MASKING AGENT



- SPILL KIT





MRRR

**MIDLAND RESOURCE
RECOVERY**

THANK YOU!

