EPA's Greenhouse Gas Regulations

Stephen Walls
Environmental Engineer
Trihydro Corporation

World Trade Group E&P Summit
Houston, Texas
October 21, 2010

Overview

- Mandatory Reporting Rule (MRR) Summary
- MRR Subpart W
- Greenhouse Gas (GHG) Air Permitting - Tailoring Rule
- Questions/Comments

Trihydro CORPORATION

MRR Summary

- 40 CFR 98 became effective Dec. 29, 2009
- Requires annual GHG emissions reporting for
  - Suppliers of fossil fuels and industrial GHGs
  - Significant GHG emitting sources (e.g. refineries)
  - Facilities that emit 25,000 metric tons per year or more of GHGs
- MRR still changing
  - Finalized 4 stayed source categories
  - Proposed 3 stayed source categories (including Oil and Natural Gas Systems –Subpart W)
  - Clarifications and technical corrections

Trihydro CORPORATION

MRR Subpart Applicable to O&G

- Finalized (report for CY 2010)
  - Subpart A – General Provisions
  - Subpart C – Combustion Sources
  - Subpart Y – Petroleum Refineries
  - Subpart P – Hydrogen Production
  - Subpart MM – Suppliers of Petroleum Products
  - Subpart NN – Suppliers of Natural Gas and NGL
- Proposed (report for CY 2011)
  - Subpart W – oil and natural gas E&P operations
  - Subpart RR – CO_2 injection for EOR

Trihydro CORPORATION

MRR Upcoming Deadlines

- Watch for final technical corrections in 2010, could simplify reporting
- Prepare for Subpart W data collection beginning January 1, 2011
- Certificate of Representation – January 30, 2011
  - Recommend earlier in January for e-GGRT system
- 1st Annual Report – March 31, 2011

Trihydro CORPORATION

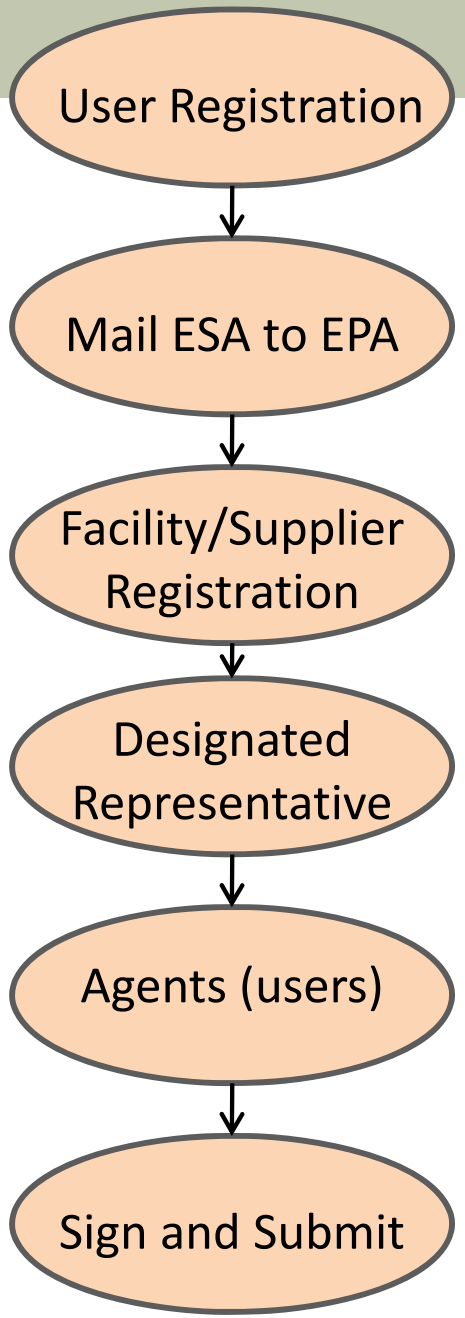
MRR Compliance – What should facilities be doing now?

- Collect data to comply with all applicable Subparts or demonstrate non-applicability (e.g. fuel usage, hours of operation, etc.)
- Calibrate meters and document accuracy
- Finalize GHG Monitoring Plan
- Prepare GHG calculation templates for emissions estimates
- Learn about the EPA's electronic Greenhouse Gas Reporting Tool (e-GGRT)

Trihydro CORPORATION

EPA's electronic GHG Reporting Tool (e-GGRT)

- Web-based system uses both step-by-step web form and bulk file uploads.
- Full reporting system available: early 2011
- Registration module available: Nov/Dec. 2010
- Certification of Representation: January 30, 2011….but!



From: http://www.epa.gov/climatechange/emissions/e-ggrt_registration.html

Subpart W – Oil and Natural Gas Systems

- Proposed, anticipate final in 2010
- Applies to upstream, processing, and local distribution companies
- Facility definition (basin vs. fence line)
- Threshold evaluation – 25,000 metric tonnes

www.chemicals-technology.com

Trihydro CORPORATION

Subpart W – Industry Segments

1. Onshore petroleum and NG production (basin level)
2. Onshore NG processing plants
3. Onshore NG transmission compression
4. Offshore petroleum and NG production
5. LNG storage
6. Underground NG storage
7. LNG import and export equipment
8. NG distribution

Trihydro CORPORATION

Subpart W – Devices and Operations

- NG pneumatic device and pump venting
- Well venting – liquids unloading, testing, completions, and workovers
- Gathering pipelines
- Storage tanks
- Associated gas venting
- Hydrocarbon liquids dissolved Co_2
- Dehydrators
- Blowdown vents – including EOR injection pump
- Compressors – reciprocating rod packing and centrifugal wet seal degassing
- Acid gas removal
- Fugitives
- Flare stacks
- Combustion from portable equipment

Subpart W – Oil and Natural Gas Systems

- Annual leak detection using optical gas imaging camera required for
  - Reciprocating compressor rod packing – without vent line
  - Transmission storage tanks
  - Fugitive sources for most source categories

Trihydro CORPORATION

GHG Emission Estimation Methods

- Reciprocating compressor rod packing venting
  - Include: rod packing, vent isolation valves, and blowdown valves
  - Three operating modes: operating, standby pressurized, not operating
  - Flow measurement: high flow sampler, calibrated bag, or meter

Trihydro CORPORATION

Emission Detection & Quantification

Industry Segment	OGI and/or Measurement	Population Count
Onshore petroleum and NG production	Reciprocating Compressor Rod Packing (RCRP)	Fugitives, Low Bleed Devices, CBM Water Well, Gathering Pipelines
Onshore NG processing plants	Fugitives, RCRP	Gathering pipelines
Onshore NG transmission compression	Fugitives, RCRP	Low Bleed Devices
Underground NG storage	Fugitives – storage station, RCRP	Fugitives – wellhead, Low Bleed Devices
LNG storage	Fugitives - excluding vapor recovery compressors, RCRP	Vapor recovery compressors
LNG Import/Export Equipment	Fugitives - excluding vapor recovery compressors, RCRP	Vapor recovery compressors
NG Distribution	Fugitives	Below-grade M&R stations, gathering pipelines, mains, and services

GHG Emission Estimation Methods

- Offshore facilities report emissions for stationary fugitive and vented sources identified in MMS GOADS study
- Portable combustion use Subpart C Tier 1 – need to estimate fuel quantity
- 1 mile of gathering pipeline = 10 metric tons CO_2e
- Workovers and completions – apply data to similar wells
- Dehydrators – GLY-Calc
- Tanks – E&P Tanks

Trihydro CORPORATION

Subpart W – Be Prepared

- Define facility boundaries
- Inventory GHG sources to be included
- Evaluate emissions for each facility against threshold
- Schedule optical gas imaging/leak quantification early in 2011
- Get familiar with emission software
- Calibrate monitoring equipment
- Plan for data collection to begin Jan. 1, 2011
  - operating times, device manufacturer information, gas/oil composition, liquid/gas flow rates, device counts, operational data, etc.

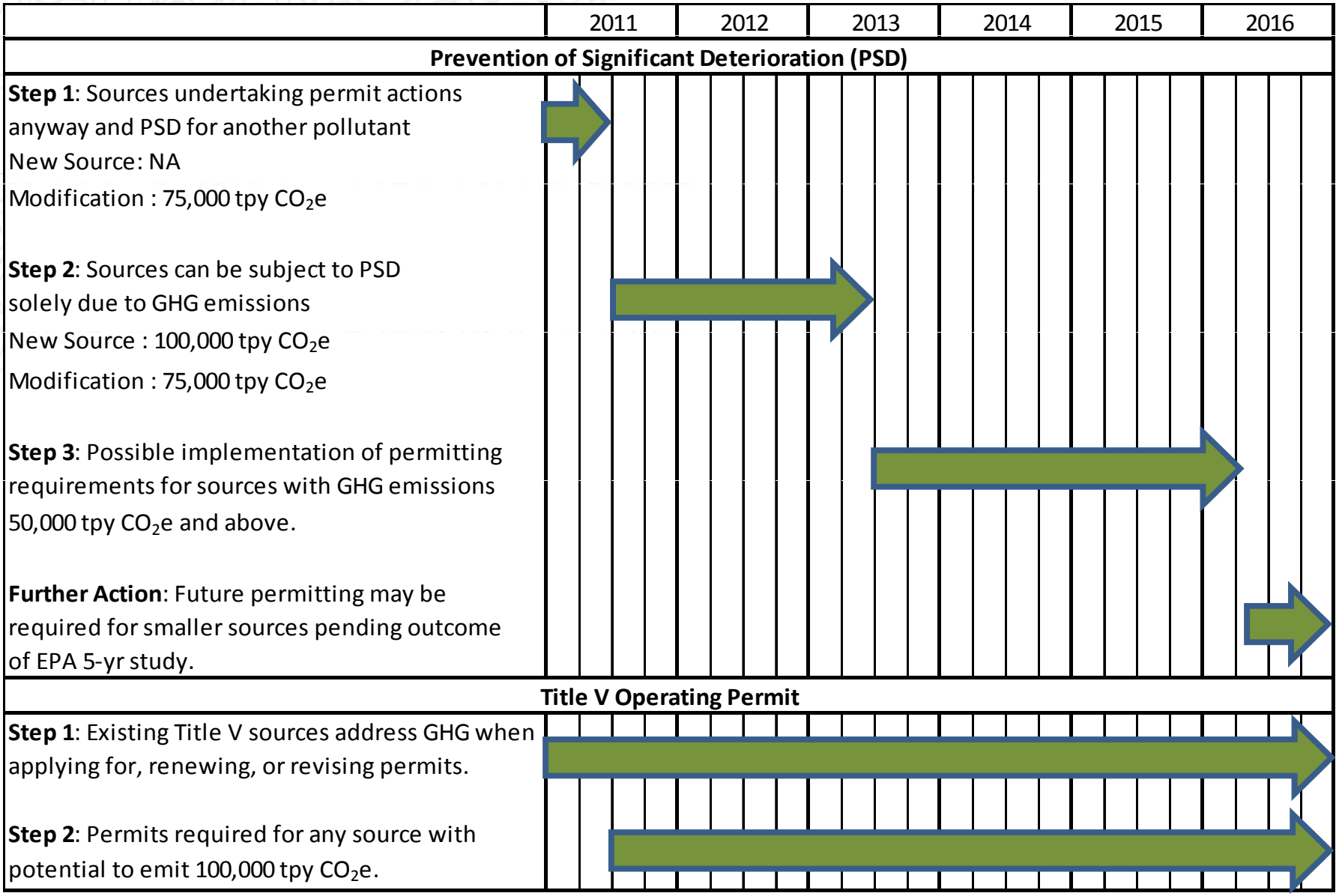
Trihydro CORPORATION

Tailoring Rule

- March 29, 2010 EPA established that Clean Air Act (CAA) permitting requirements applied to newly regulated GHG pollutants
- Primary purpose of Tailoring Rule to reduce regulatory permitting burden by increasing permit thresholds for GHGs

Trihydro CORPORATION

Phased Implementation



Potential Concerns

- Key differences between MRR and Tailoring Rule
  - Different pollutants
  - Different units
  - Different sources
- BACT for GHG
- Timing – address GHG in PSD or Title V as early as January 2, 2011
- State Implementation
- Legal challenges

Trihydro CORPORATION

Summary

- MRR
  - Make sure 2010 data has been collected MRR reporting or non-applicability
  - Designated Representative – early January 2011
- Subpart W
  - Prepare for data collection 1/1/11
  - Inventory facilities and sources
  - Plan to schedule field tasks early in 2011
- Tailoring Rule
  - Evaluate GHG emissions for PSD and/or Title V applicability

Trihydro CORPORATION

Thank You.

Trihydro Corporation
1252 Commerce Drive
Laramie, Wyoming 82070
307-745-7475
www.trihydro.com

Stephen Walls, Air Permitting Engineer
swalls@trihydro.com