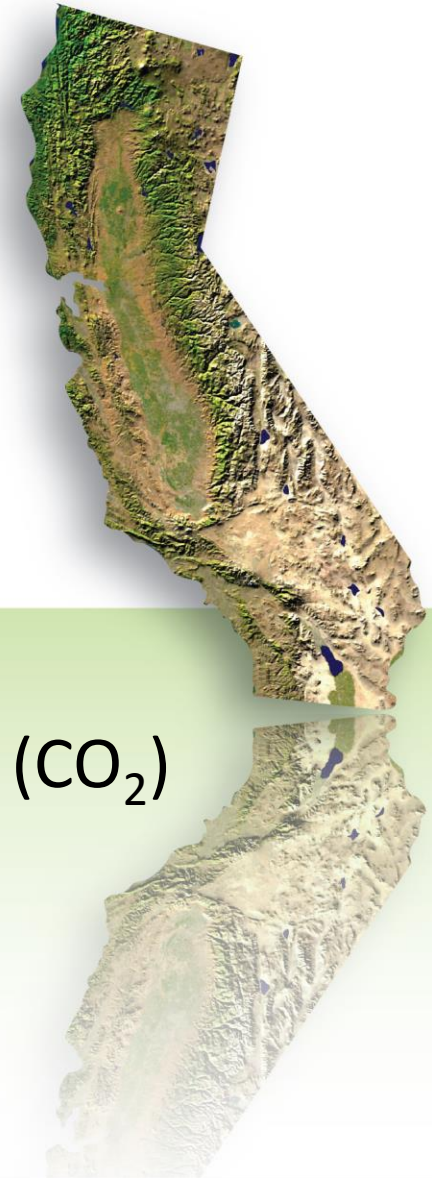
# Verifier Accreditation Training for Mandatory Greenhouse Gas Reporting



Transactions Specialty

Course 2.4: Suppliers of Carbon Dioxide ($CO_2$)

California Environmental Protection Agency

Air Resources Board

# MRR Verifier Accreditation: Course Content and Exams

## Course 2: Transactions Specialty

2.1 Electric Power Entities

2.2 Suppliers of Transportation Fuels

2.3 Suppliers of Natural Gas, Natural Gas Liquids, Liquefied Petroleum Gas, CNG and LNG

**2.4 Suppliers of Carbon Dioxide ($CO_2$)**

# Course 2.4 Handouts

No handouts are provided for this course.

# Applicability § 95123

- All suppliers of produced $CO_2$ for use in California
- California importers and exporters of ≥ 10,000 MT $CO_2$
- Facilities that capture $CO_2$ from processes or geological sources for commercial purposes, or for injection underground
- Can combine with other reports (unlike other suppliers)

*On-site use of the $CO_2$ recovered from a process is not covered by § 95123.*

# Types of $CO_2$ Emissions Reported

- Mass of $CO_2$ captured from production process units
- Mass of $CO_2$ extracted from $CO_2$ production wells
- Mass of $CO_2$ imported and exported
  - Exports for purposes of geologic sequestration must be reported separately from exports for other purposes
- 8 major refineries capture some $CO_2$ for supply to other industries, mostly food and beverage
  - Most capture $CO_2$ from $H_2$ production process
- 1 brewery also captures $CO_2$

# Calculation of $CO_2$ Emissions

Emissions calculated using equations in 40 CFR 98.423

- Using mass or volume meters
- If volume meters are used, volume is multiplied by density; measurements taken quarterly or more often for both

# Verification of $CO_2$ Emissions

Verification

- Ensure completeness of data
- Ensure data are accurately measured, compiled and entered
- Ask about meter location and concentration measurement location to ensure reported data matches actual $CO_2$ supplied
- May be able to do quick review of sales records
- If $CO_2$ is captured from $H_2$ production process, these emissions must be subtracted from Subpart P emissions ( § 95114(i))

# Case Study 1
# $CO_2$ Reported Under Subpart P and PP

Calculate the $CO_2$ reported under Subparts P and PP for a $CO_2$ supplier given the following information:

- The hydrogen production unit at a refinery produces 85,000 $MTCO_2$
  - The refinery captures some $CO_2$ generated from hydrogen production and provides the following annual data: 20,000,000 scm capture, 97% $CO_2$ concentration by weight, 0.00183 MT/scm
- What is the amount of $CO_2$ reported under Subpart PP as $CO_2$ supplied and what are the emissions reported under subpart P as hydrogen production unit emissions?

# Case Study 1 - Solution
# $CO_2$ Reported Under Subpart P and PP

Calculate the $CO_2$ reported under Subpart PP for a $CO_2$ supplier given the following information:

- Answer: 20,000,000 scm * 97% $CO_2$ * .00183 $MTCO_2$/ = 35,502 $MTCO_2$ reported under PP
- 85,000 $MTCO_2$ – 35,502 $MTCO_2$ = 49,498 MT $CO_2$ reported under subpart P

# Questions and ARB Comments

**Course 2: Transactions Specialty**

***Complete:***

2.1 Electric Power Entities

2.2 Suppliers of Transportation Fuels

2.3 Suppliers of Natural Gas, Natural Gas Liquids, Liquefied Petroleum Gas, CNG and LNG

2.4 Suppliers of Carbon Dioxide ($CO_2$)