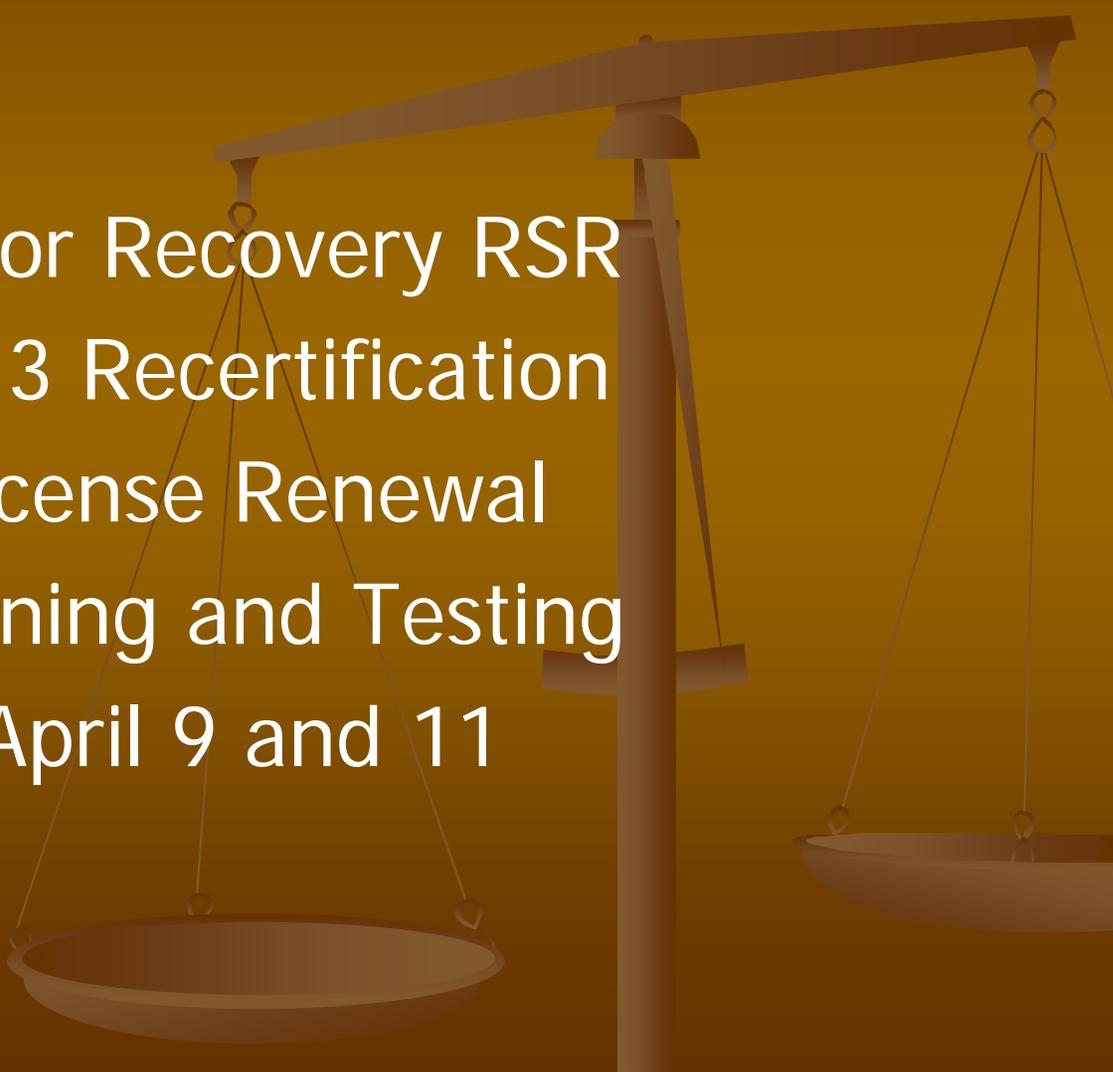


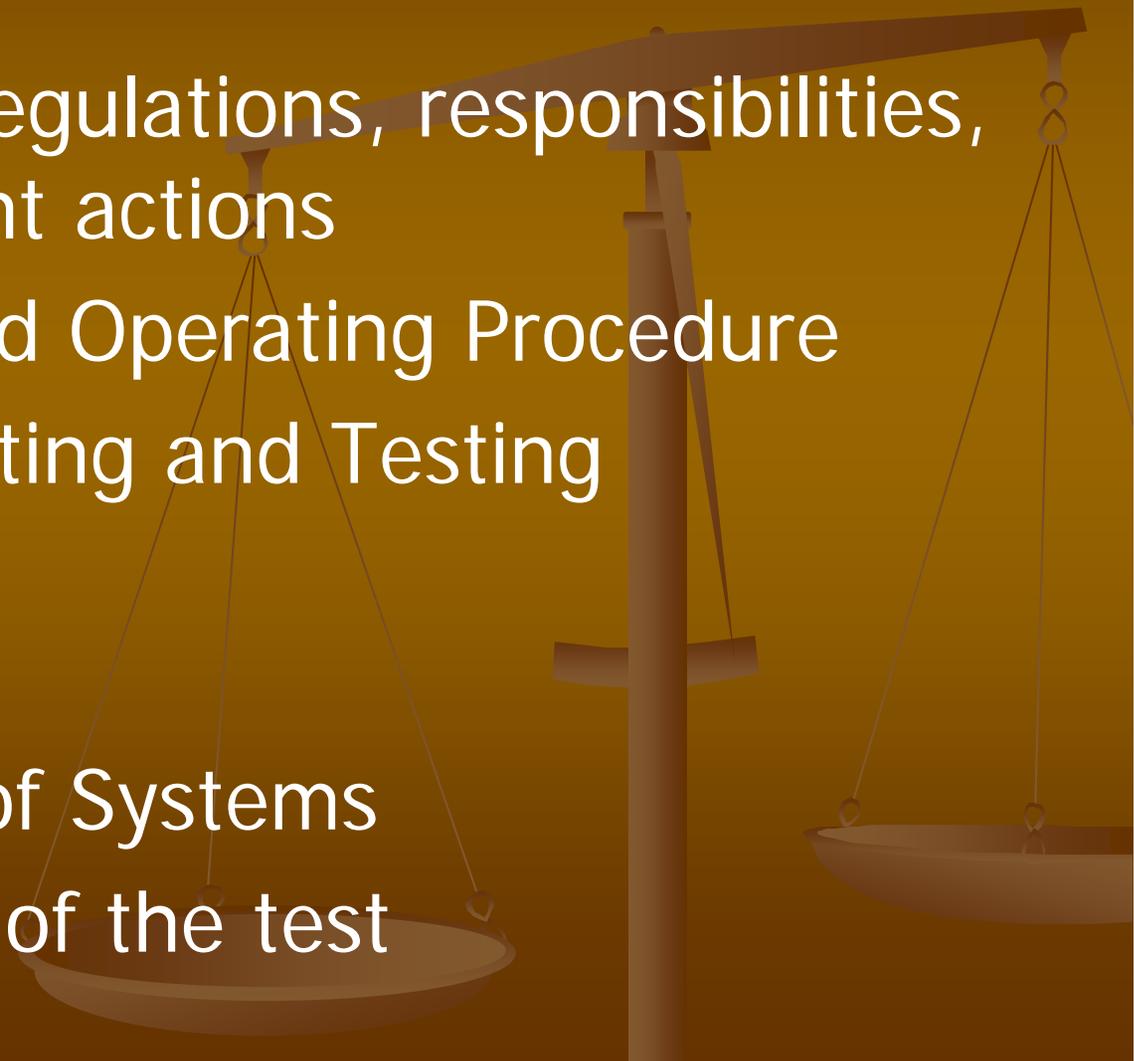
Arizona Department of Weights and Measures

Vapor Recovery RSR
2013 Recertification
License Renewal
Training and Testing
April 9 and 11



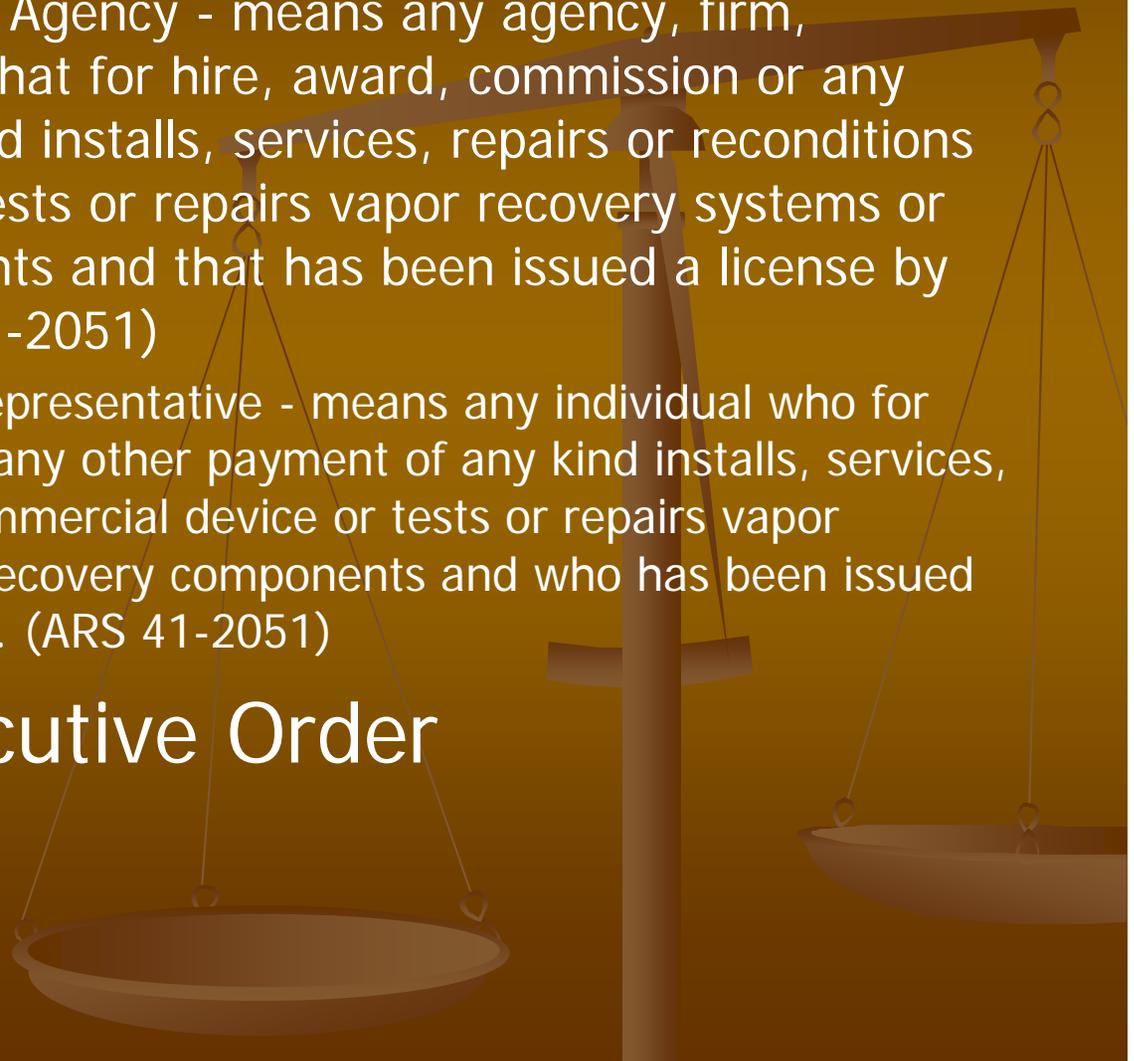
Training Outline

- Review of the regulations, responsibilities, and enforcement actions
- Review Standard Operating Procedure
- Program Permitting and Testing Requirements
- Basic Systems
- Specific Types of Systems
- Unique aspects of the test

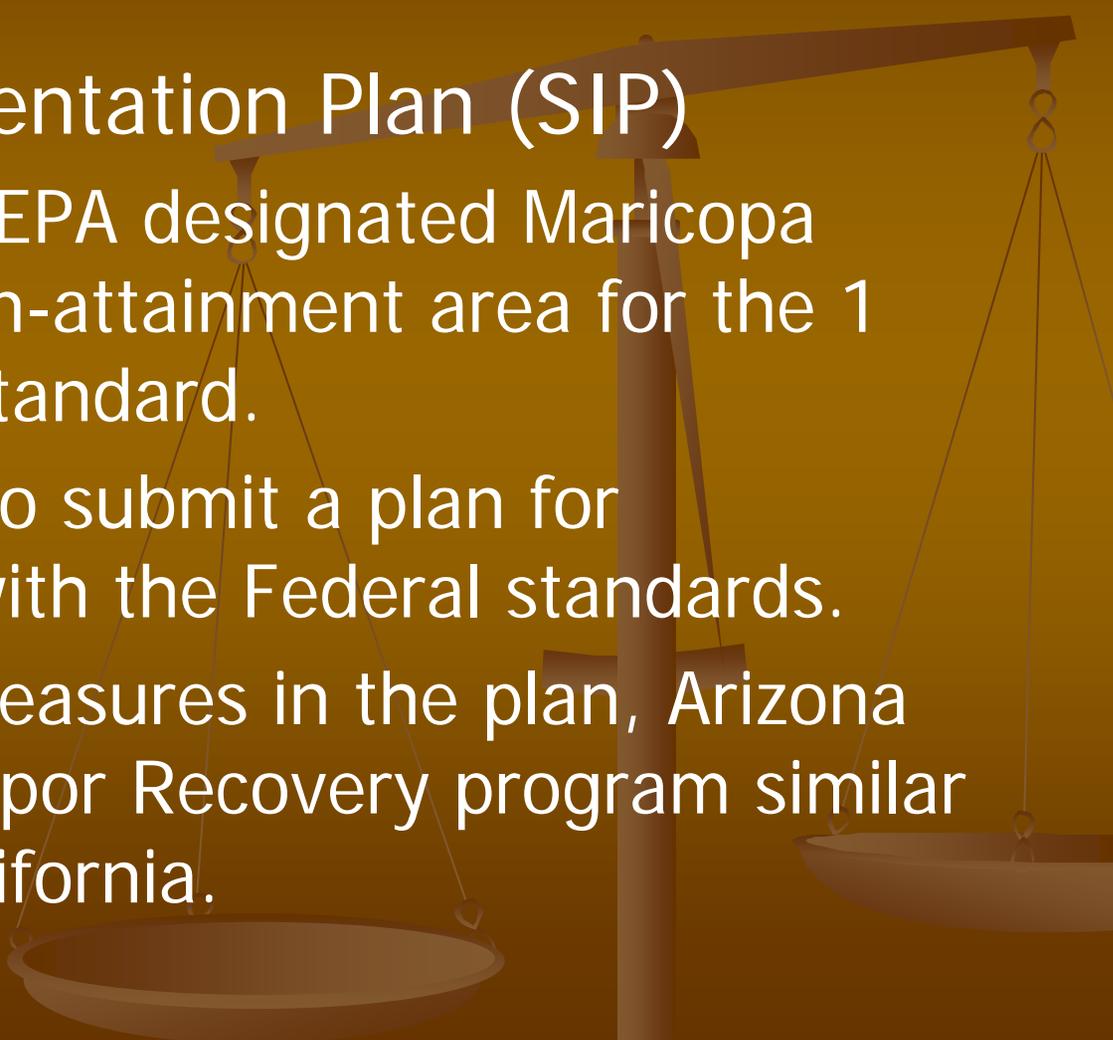


Acronyms

- RSA – Registered Service Agency - means any agency, firm, company or corporation that for hire, award, commission or any other payment of any kind installs, services, repairs or reconditions a commercial device or tests or repairs vapor recovery systems or vapor recovery components and that has been issued a license by the department. (ARS 41-2051)
- RSR – Registered Service Representative - means any individual who for hire, award, commission or any other payment of any kind installs, services, repairs or reconditions a commercial device or tests or repairs vapor recovery systems or vapor recovery components and who has been issued a license by the department. (ARS 41-2051)
- EO – CARB Executive Order

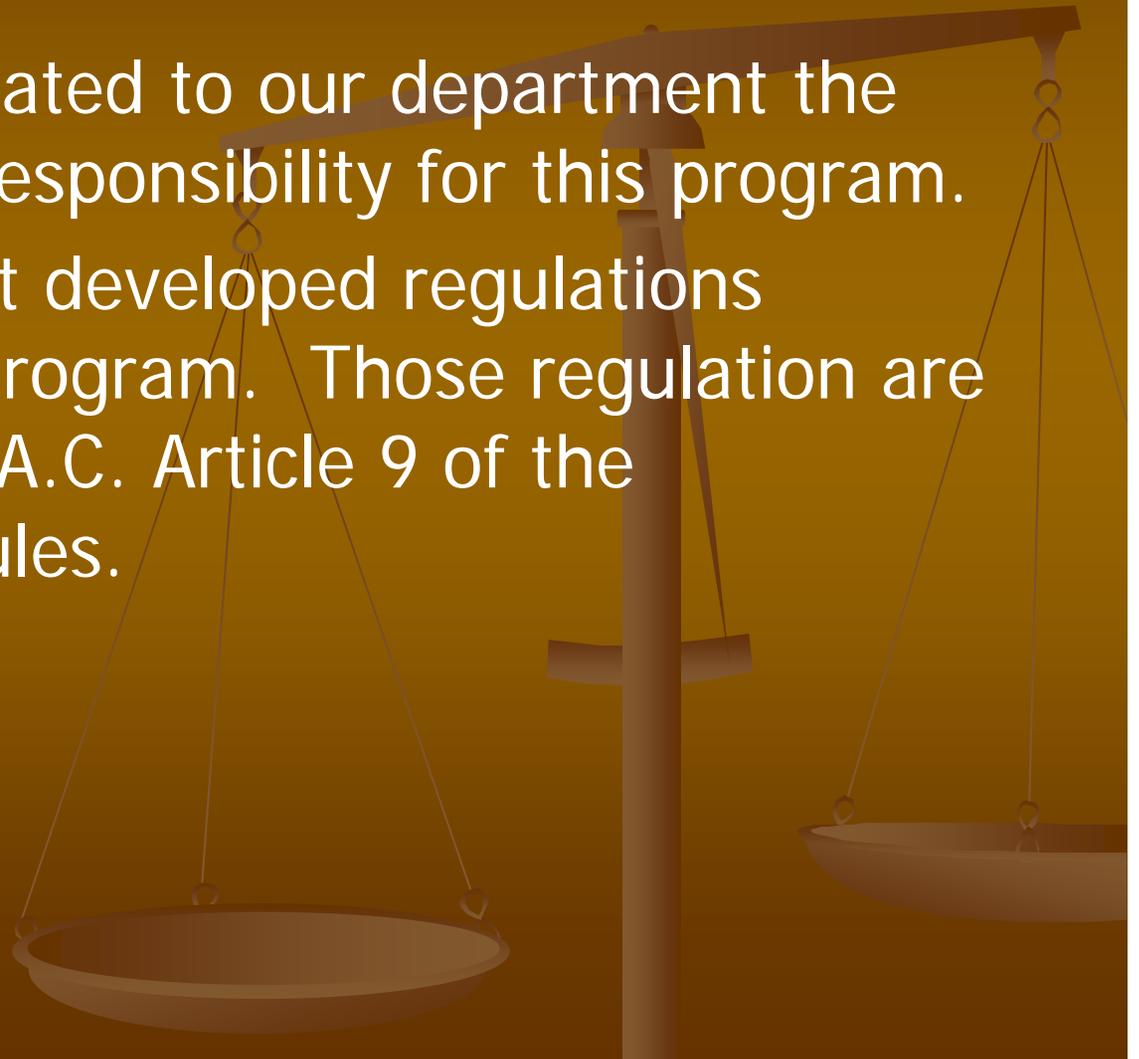


State Program Authority

- State Implementation Plan (SIP)
 - In 1999, the EPA designated Maricopa County a non-attainment area for the 1 hour ozone standard.
 - Arizona had to submit a plan for compliance with the Federal standards.
 - One of the measures in the plan, Arizona adopted a Vapor Recovery program similar to that of California.
- 

State Program Authority (cont.)

- The State delegated to our department the administrative responsibility for this program.
- The Department developed regulations governing the program. Those regulations are delineated in A.A.C. Article 9 of the Department's rules.



Regulatory Requirements

- Statutes
- Rules
- ADWM Standard Operating Procedure
- CARB Executive Orders



State Program Authority (cont.)

- Below are sections where you can find the regulatory requirements for RSAs and RSRs.

R20-2-601 - Qualification; License and renewal Application

R20-2-602 - Duties

R20-2-603 - Grounds for Denying License or Renewal: Disciplinary Action; and Certification of Standards and Testing Equipment

R20-2-604 - Prohibited Acts

R20-2-605 - Material Incorporated by Reference

R20-2-104 - Administrative Enforcement Action



State Program Authority (cont.)

- Below are sections where you can find the regulatory requirements for the Vapor Recovery Program.

R20-2-901 - Material Incorporated by reference

R20-2-902 - Exemptions

R20-2-903 - Equipment and Installation

R20-2-904 - Application Requirement and Process for Authority to Construct Plan Approval

R20-2-905 - Initial Inspection and Testing

R20-2-906 - Fees

R20-2-907 - Operation

R20-2-908 - Training and Public Education

R20-2-909 - Recordkeeping and Reporting

R20-2-910 - Annual Inspection and Testing

R20-2-911 - Compliance Inspections



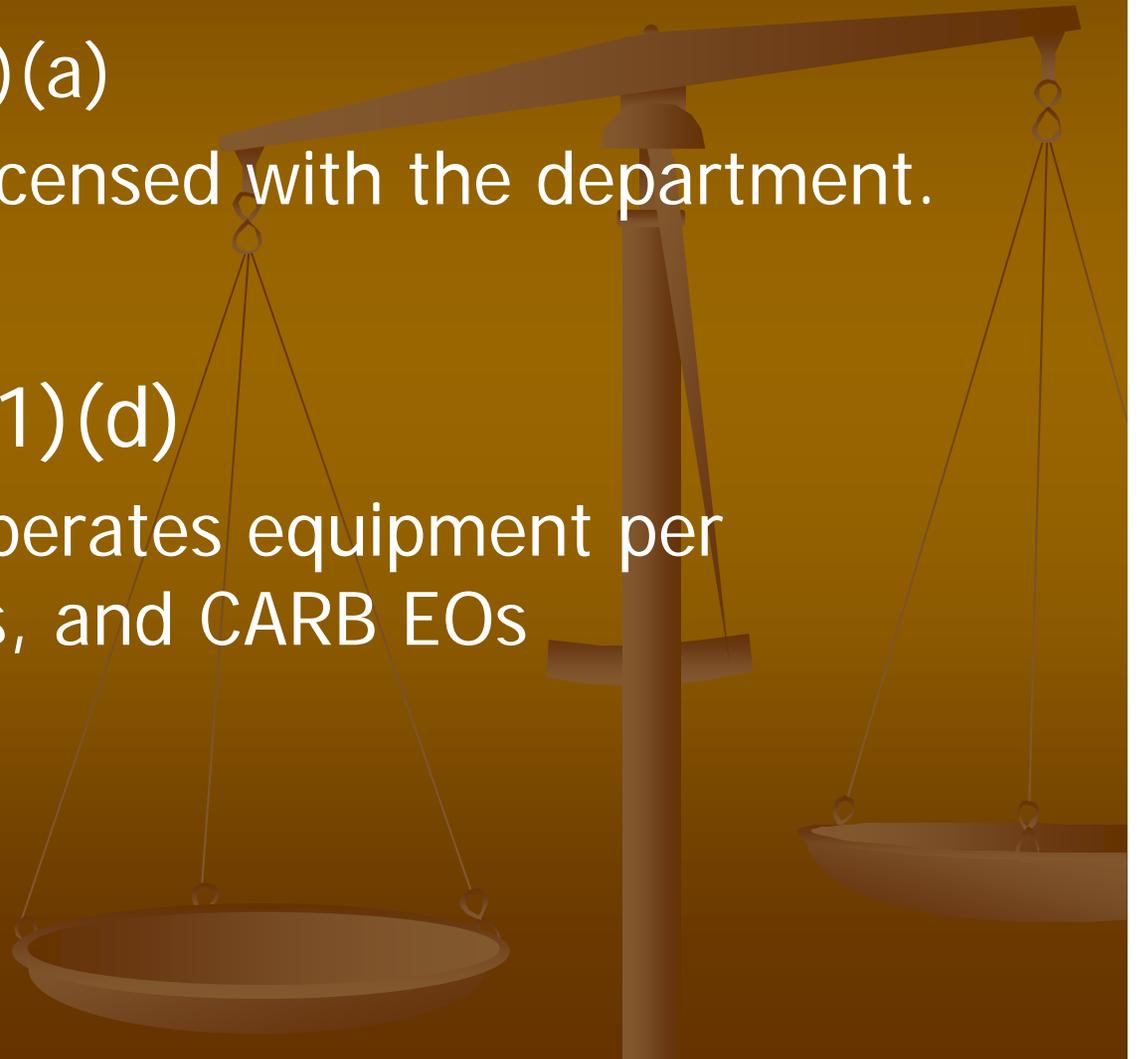
Registered Service Agency (RSA)

- R20-2-601 (A)(1)(a)

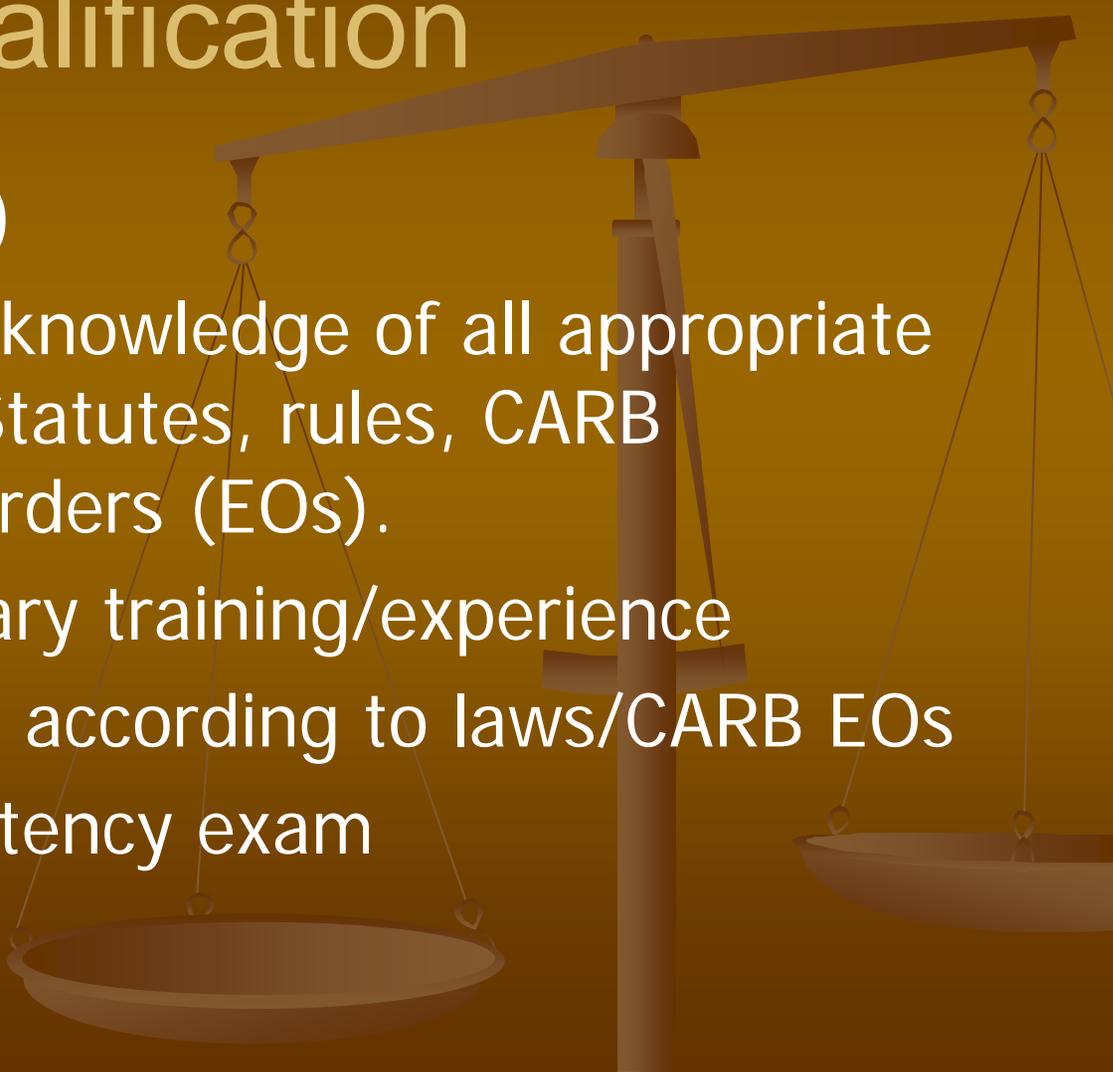
RSA's need to be licensed with the department.

- R20-2-601 (A)(1)(d)

- Ensure RSR operates equipment per Statutes, rules, and CARB EOs



Registered Service Representative (RSR) Qualification



- R20-2-601 (C)
 1. A thorough knowledge of all appropriate law within Statutes, rules, CARB Executive Orders (EOs).
 2. Has necessary training/experience
 3. Will operate according to laws/CARB EOs
 4. Pass competency exam

RSR Training/Exam Requirements

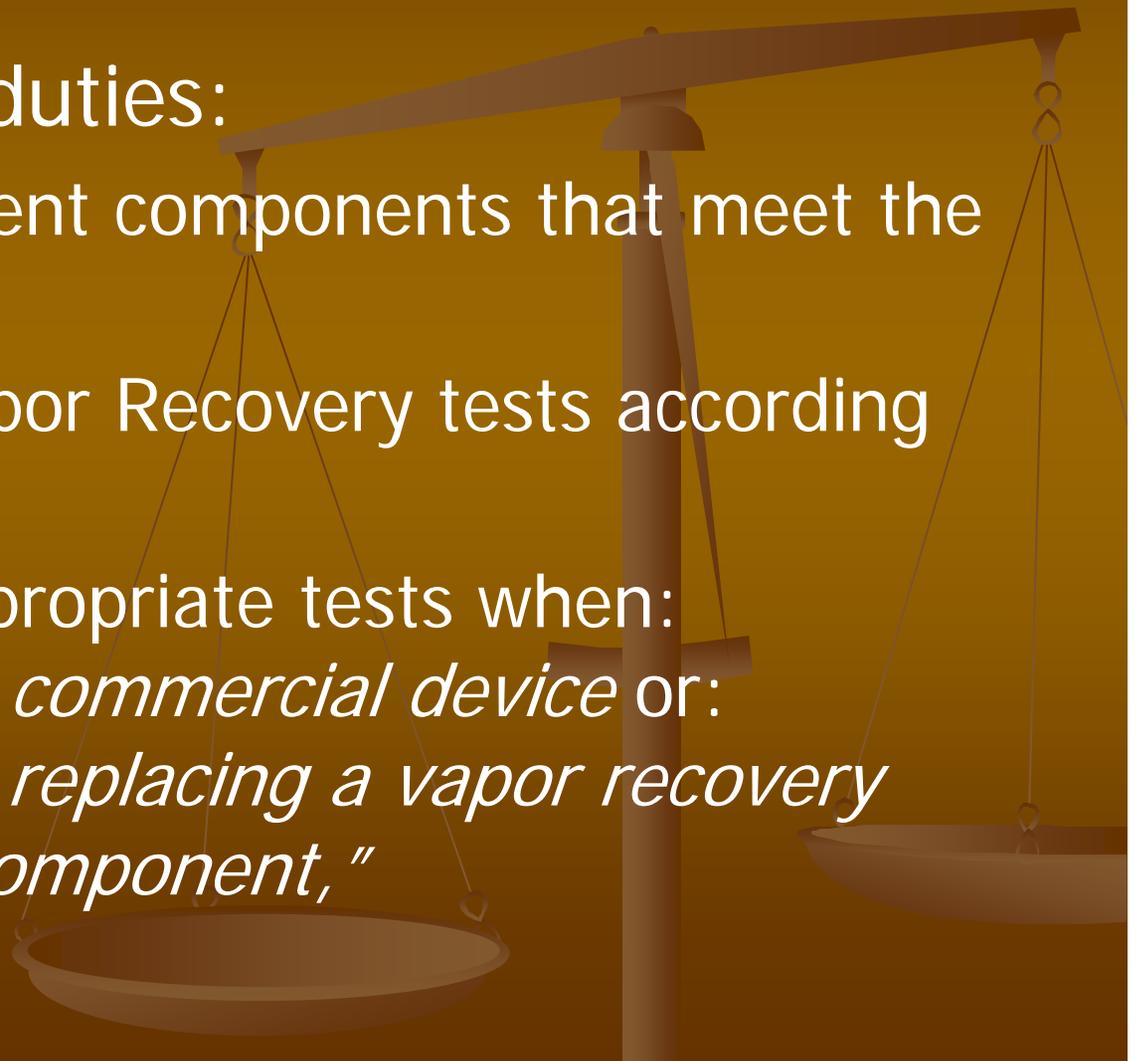
- R20-2-601 (D)
- Complete the Department's training class, Take and pass a written Vapor Recovery exam, administered by the Department.



R20-2-602 (B) - RSR Duties

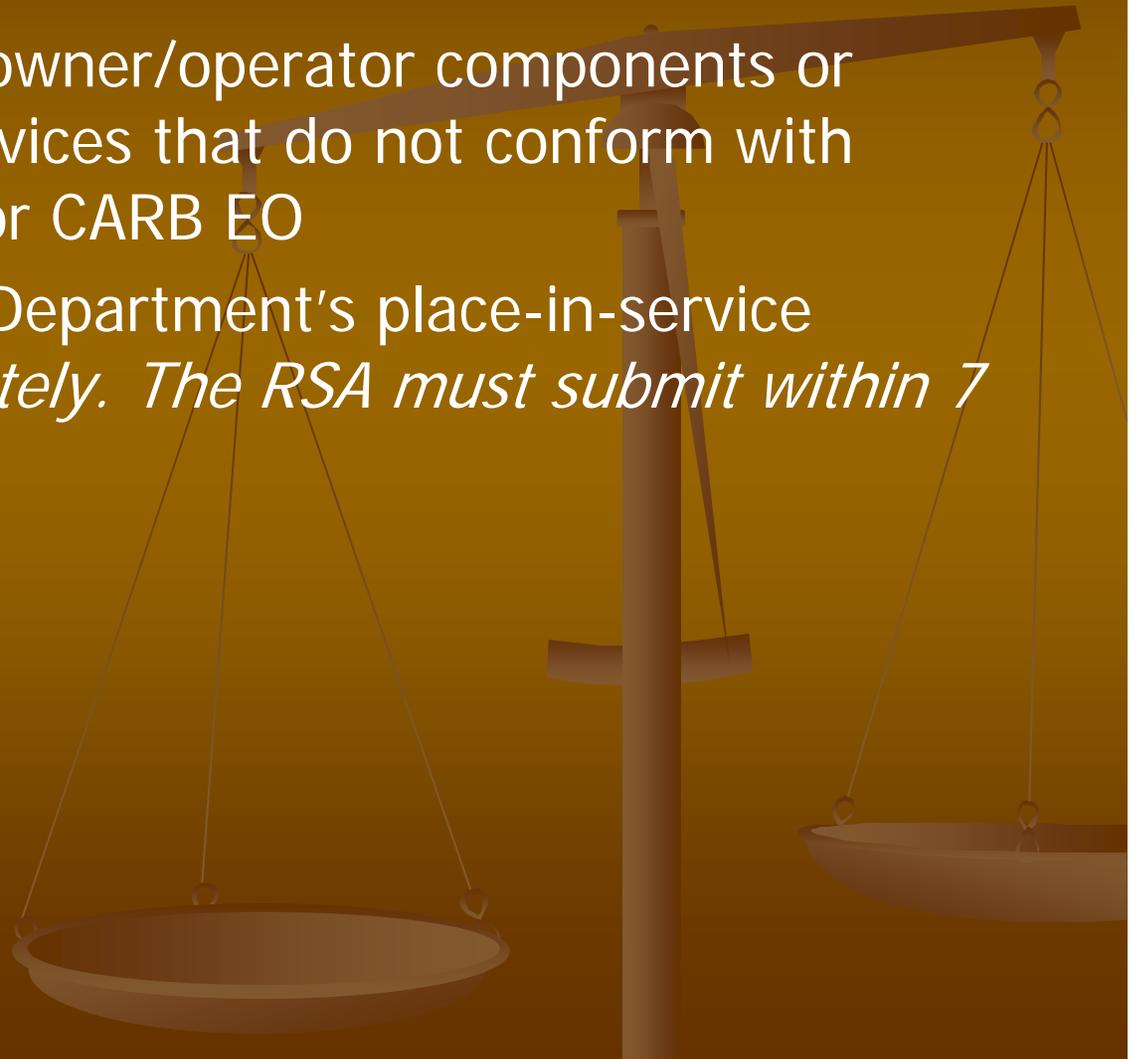
- RSRs have 5 duties:

1. Install equipment components that meet the requirements
2. Perform all Vapor Recovery tests according rule;
3. Perform all appropriate tests when:
*"repairing a commercial device or:
repairing or replacing a vapor recovery system or component,"*



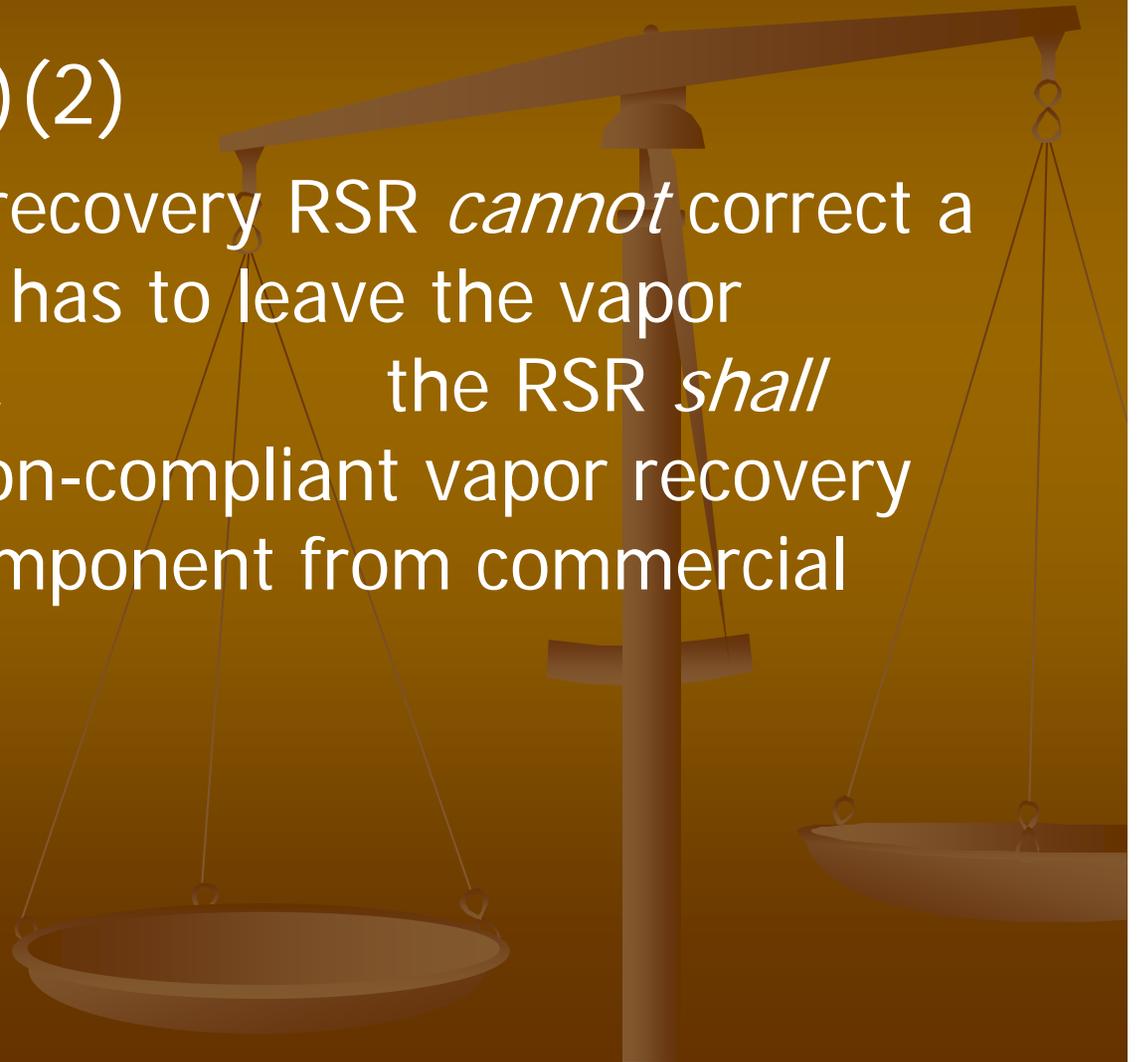
R20-2-602 (B) - RSR Duties, cont....

4. Report to the owner/operator components or commercial devices that do not conform with Statute, rule, or CARB EO
5. Complete the Department's place-in-service reports *accurately. The RSA must submit within 7 days.*



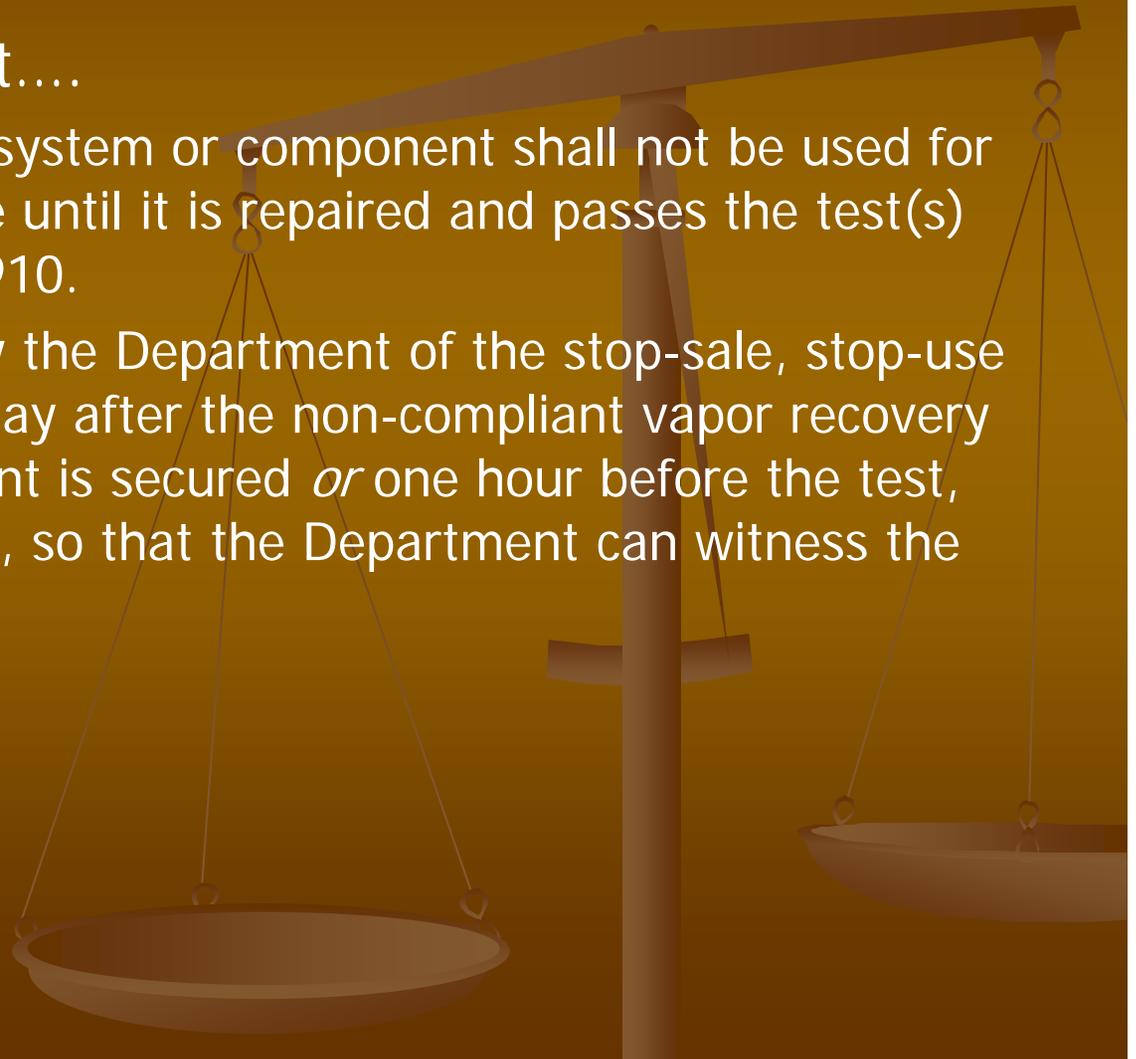
RSR Duties for Non-Compliant Equipment

- R20-2-602 (B)(2)
 - If a vapor recovery RSR *cannot* correct a violation *and* has to leave the vapor recovery site, the RSR *shall* secure the non-compliant vapor recovery system or component from commercial use.

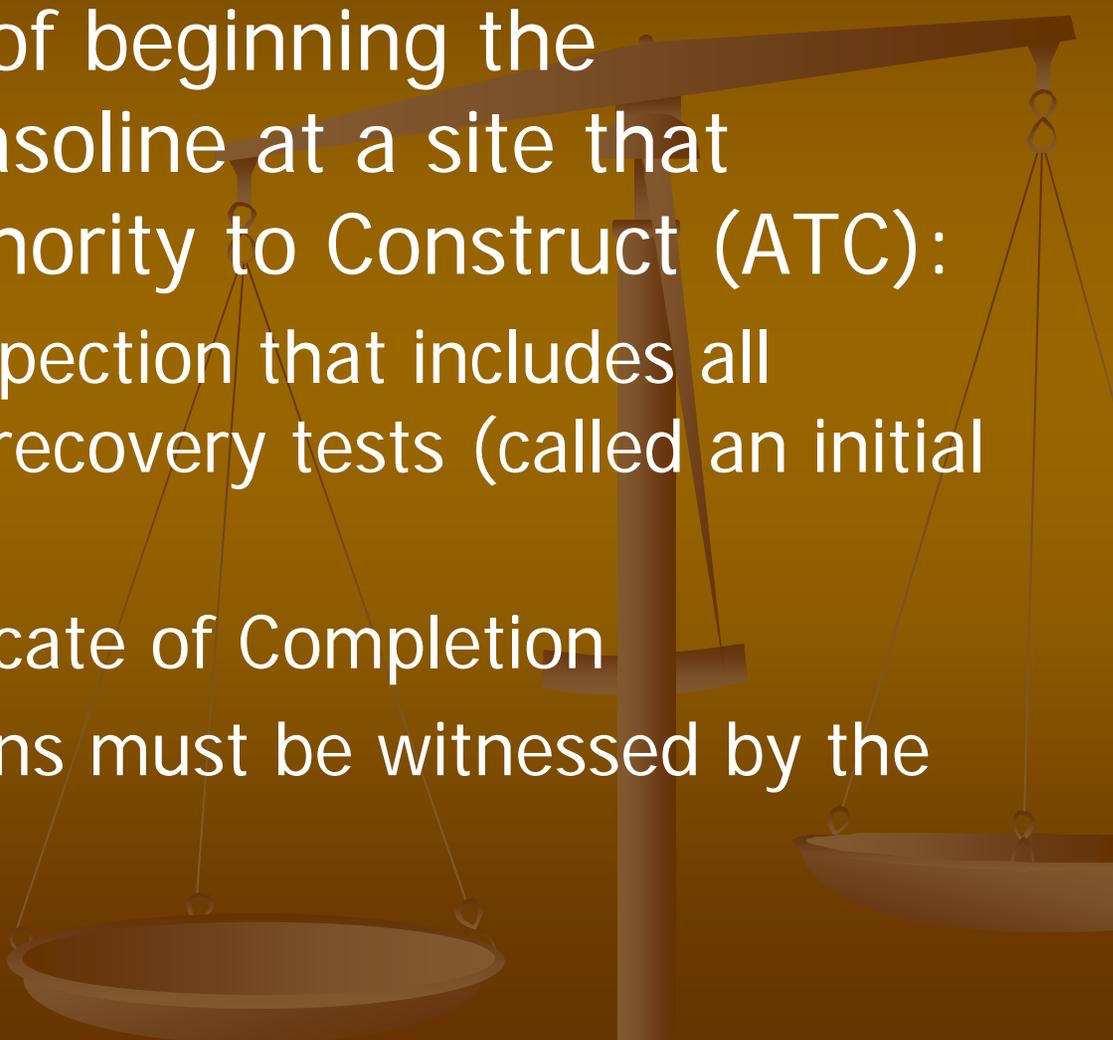


RSR Duties for Non-Compliant Equipment

- R20-2-602 (B), cont....
 - The non-compliant system or component shall not be used for commercial purpose until it is repaired and passes the test(s) required by R20-2-910.
 - The RSR shall notify the Department of the stop-sale, stop-use by 6:00 am of the day after the non-compliant vapor recovery system *or* component is secured *or* one hour before the test, whichever is sooner, so that the Department can witness the test.



Initial Inspection and Testing R20-2-905(A)

- Within 10 days of beginning the dispensing of gasoline at a site that required an Authority to Construct (ATC):
 - Schedule an inspection that includes all required vapor recovery tests (called an initial inspection)
 - Submit a Certificate of Completion
 - These inspections must be witnessed by the Department
- 

Initial Inspection and Testing

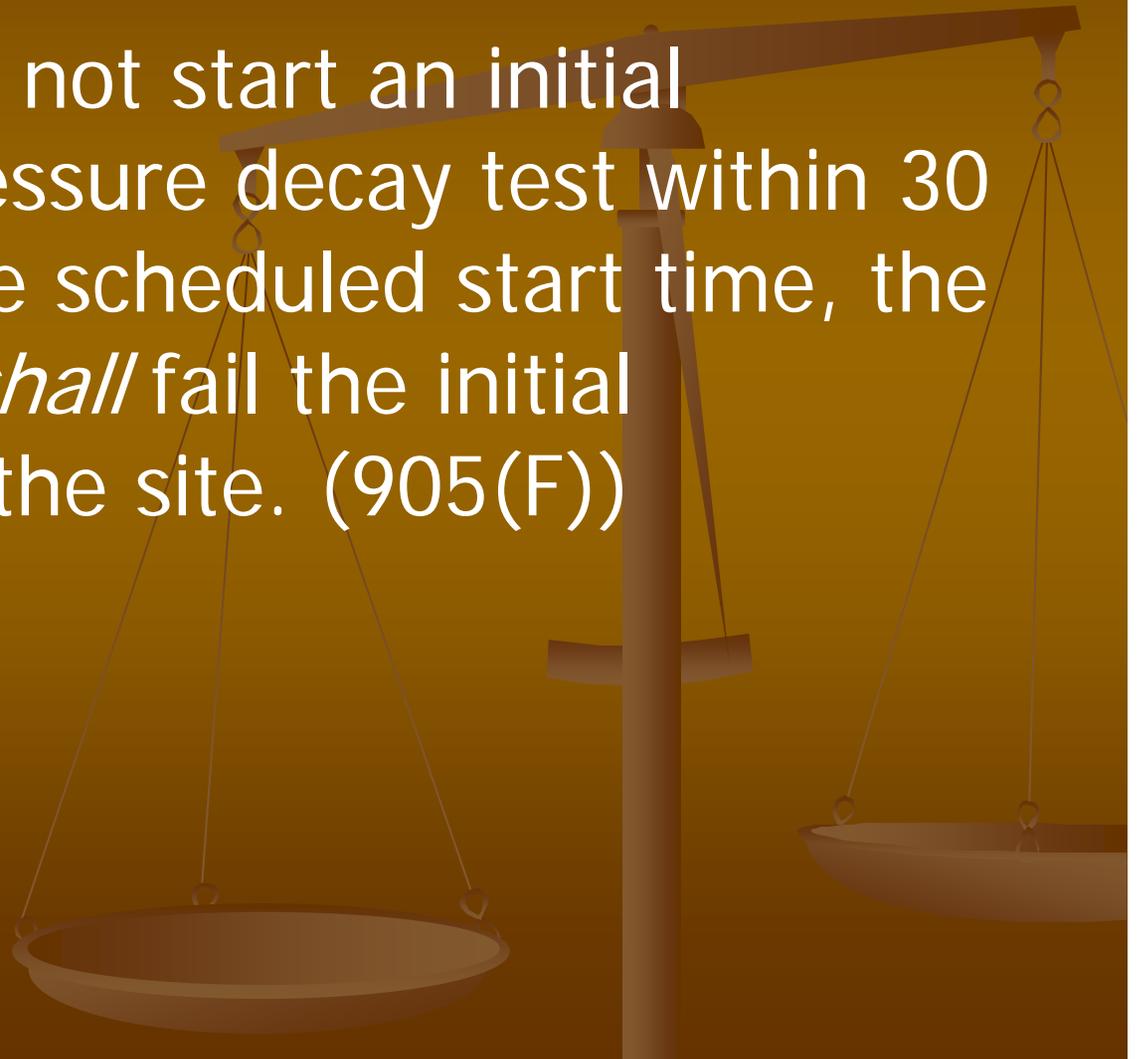
R20-2-905, cont...

- Failing equipment shall remain out of service until the system/component passes appropriate tests (905(C))
- A person who cancels an initial inspection *shall* notify the Department by calling the Department's designated telephone number at least one hour before the scheduled inspection and *shall* reschedule the inspection within 10 days after this notification. (905(D))
- Notify department for repairs. Reinspection date/time must be approved. (905(E))

Initial Inspection and Testing

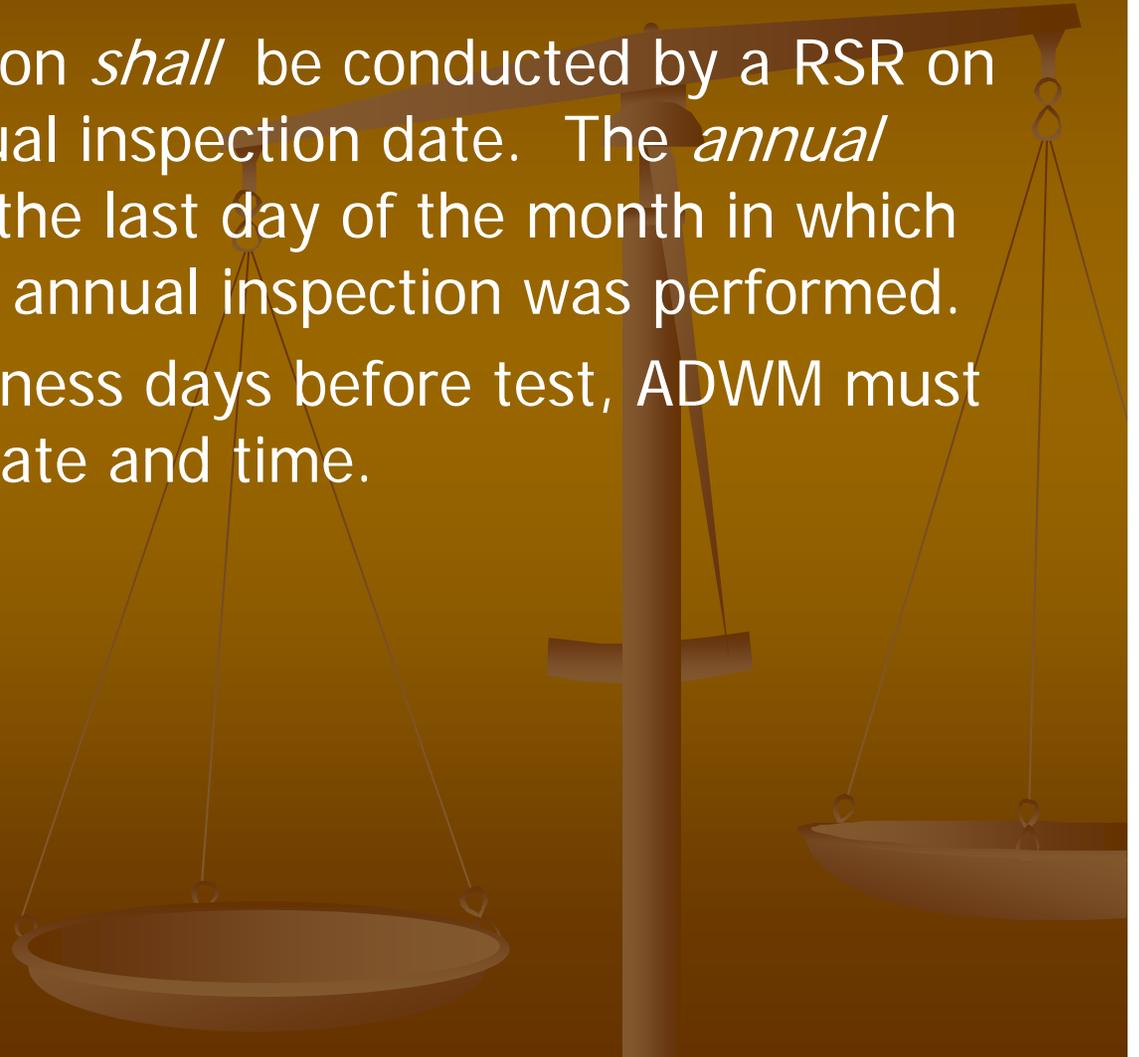
R20-2-905, cont...

- If a RSR does not start an initial inspection pressure decay test within 30 minutes of the scheduled start time, the Department *shall* fail the initial inspection of the site. (905(F))



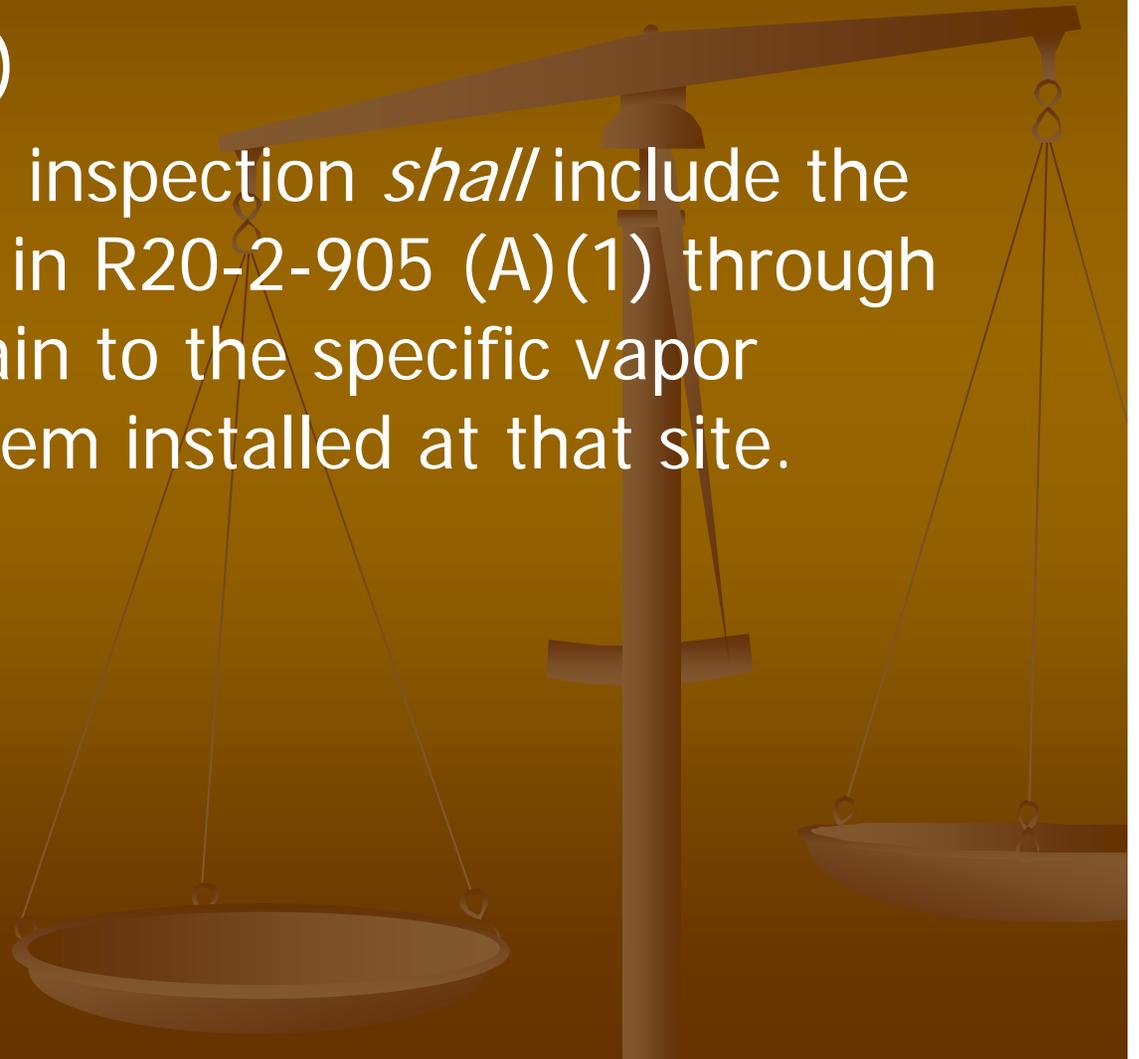
Annual Inspection and Testing R20-2-910(A)

- An annual inspection *shall* be conducted by a RSR on or before the annual inspection date. The *annual inspection date* is the last day of the month in which the last scheduled annual inspection was performed.
- RSA notify 10 business days before test, ADWM must approve the test date and time.



Annual Inspection and Testing

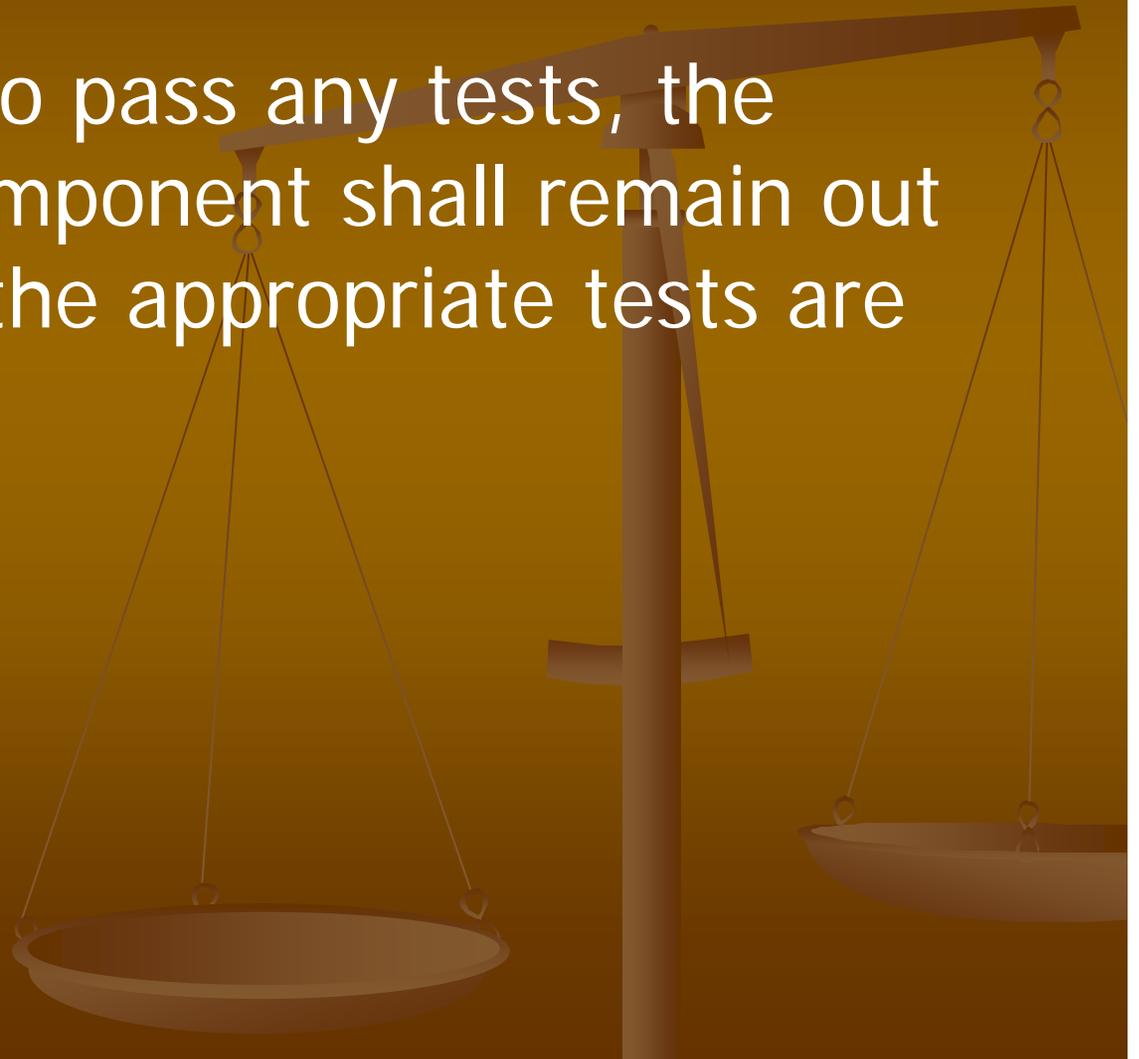
- R20-2-910 (B)
 - The annual inspection *shall* include the tests defined in R20-2-905 (A)(1) through (8) that pertain to the specific vapor recovery system installed at that site.



Annual Inspection and Testing

R20-2-910 (D)

- If the site fails to pass any tests, the affected site/component shall remain out of service until the appropriate tests are passed.



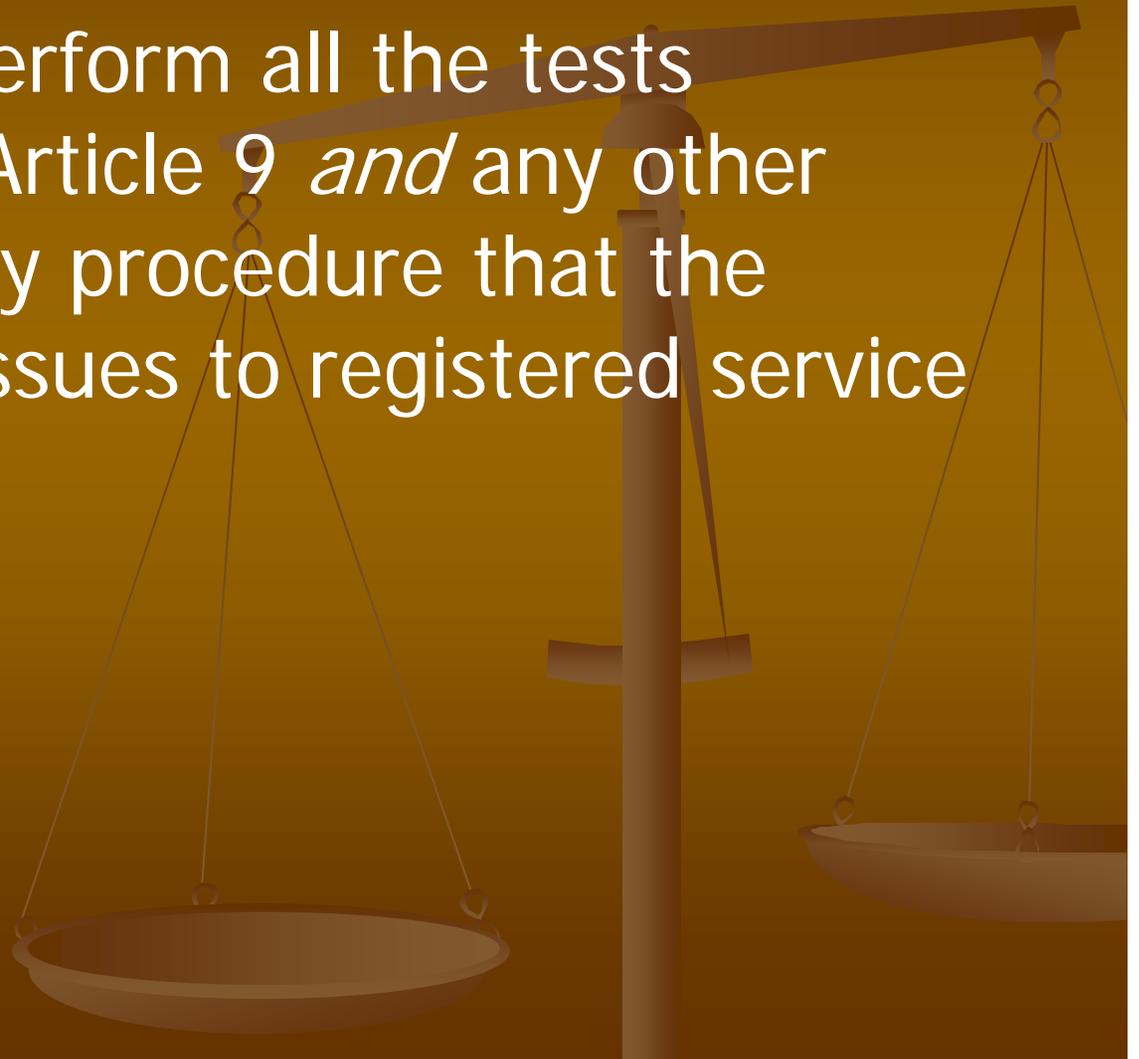
Annual Inspection and Testing R20-2-910 (E)

- After an annual inspection begins the RSR shall not make a repair to the vapor recovery system or component until the results of the inspection are recorded.



Annual Inspection and Testing R20-2-910 (F)

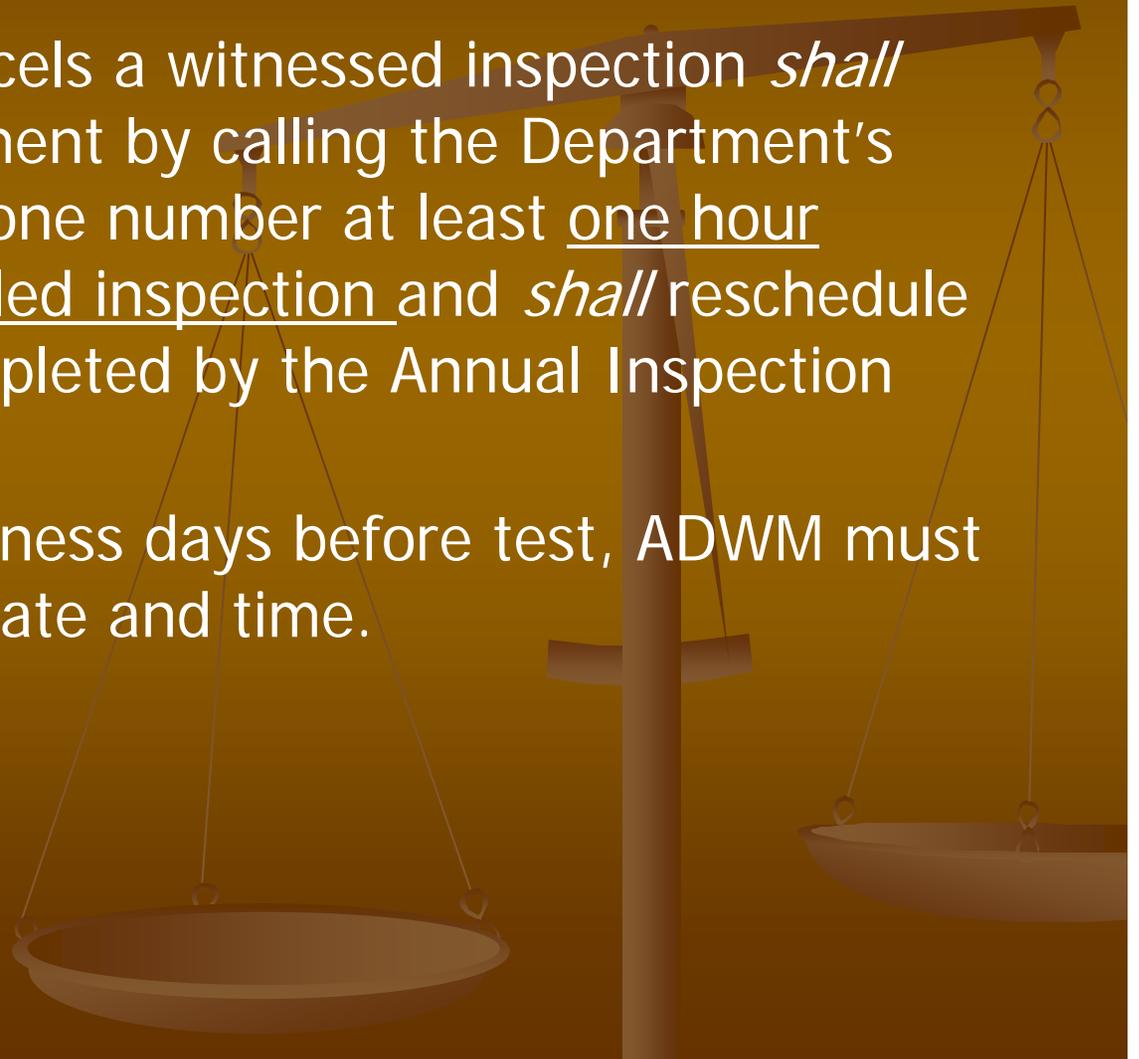
- A RSR *shall* perform all the tests according to Article 9 *and* any other vapor recovery procedure that the Department issues to registered service agencies.



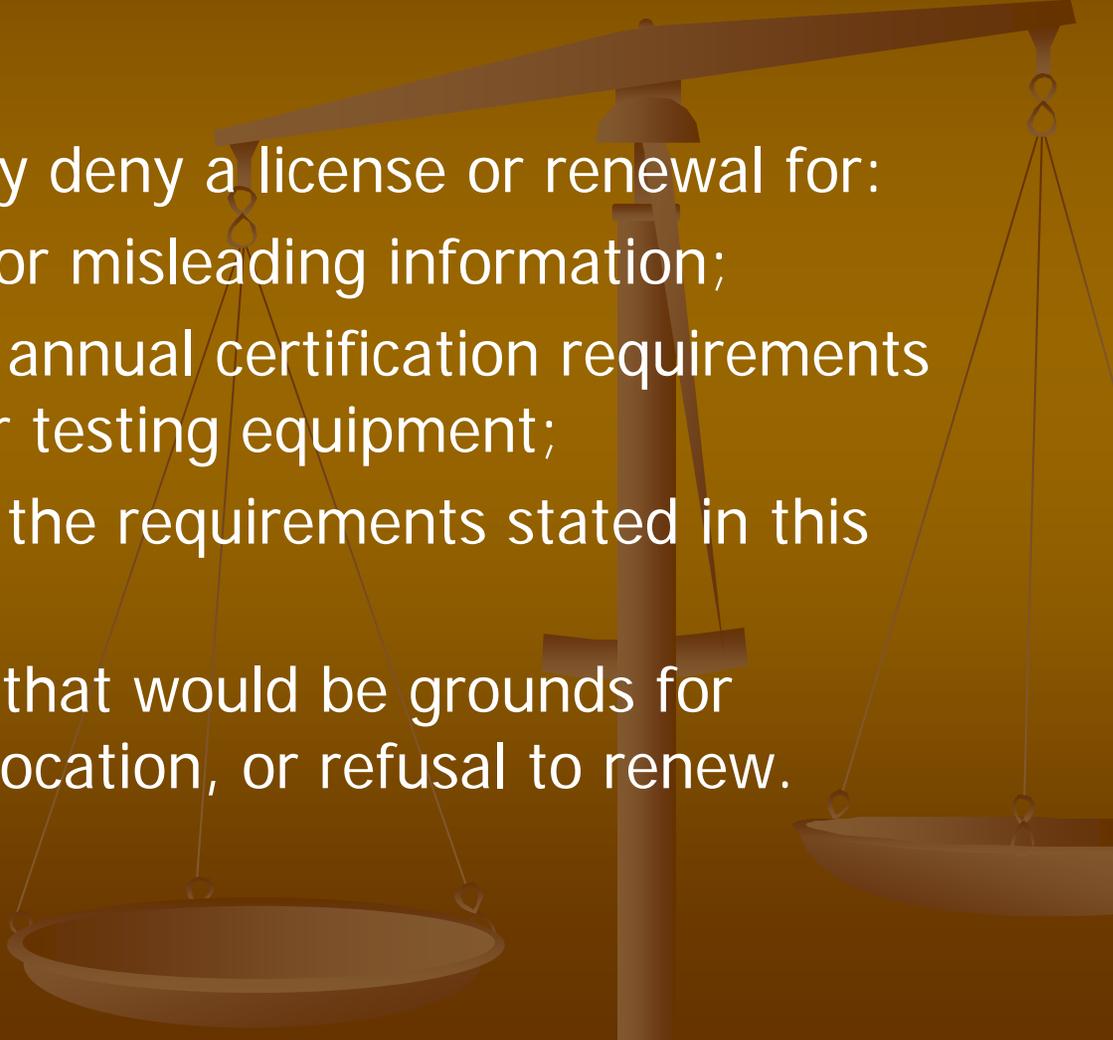
Annual Inspection and Testing

R20-2-910 (G)

- A person who cancels a witnessed inspection *shall* notify the Department by calling the Department's designated telephone number at least one hour before the scheduled inspection and *shall* reschedule the test to be completed by the Annual Inspection date.
- RSA notify 10 business days before test, ADWM must approve the test date and time.

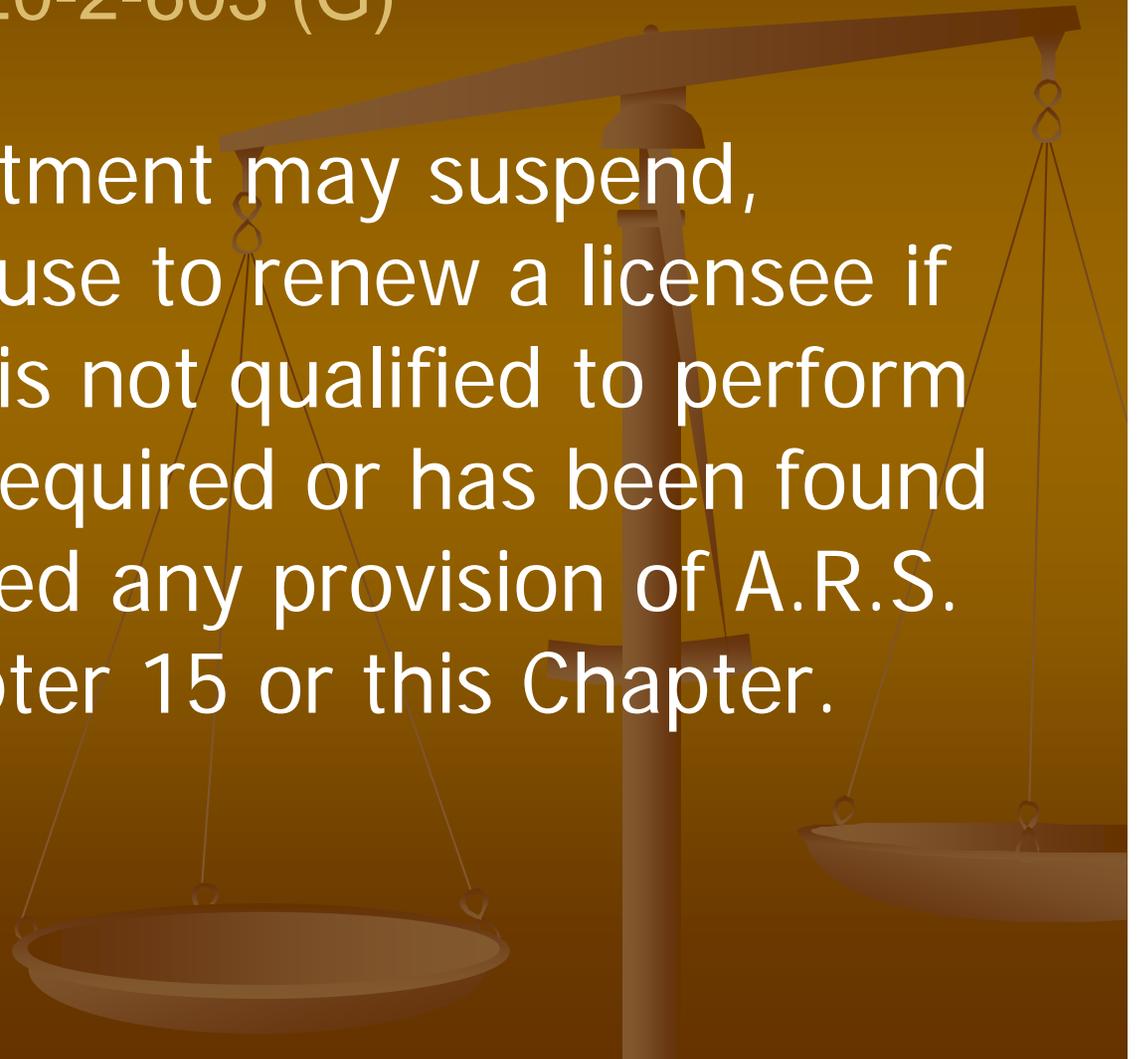


Grounds for Denying License or renewal; Disciplinary Action and Certification of Standards and Testing Equipment R20-2-603 (F)

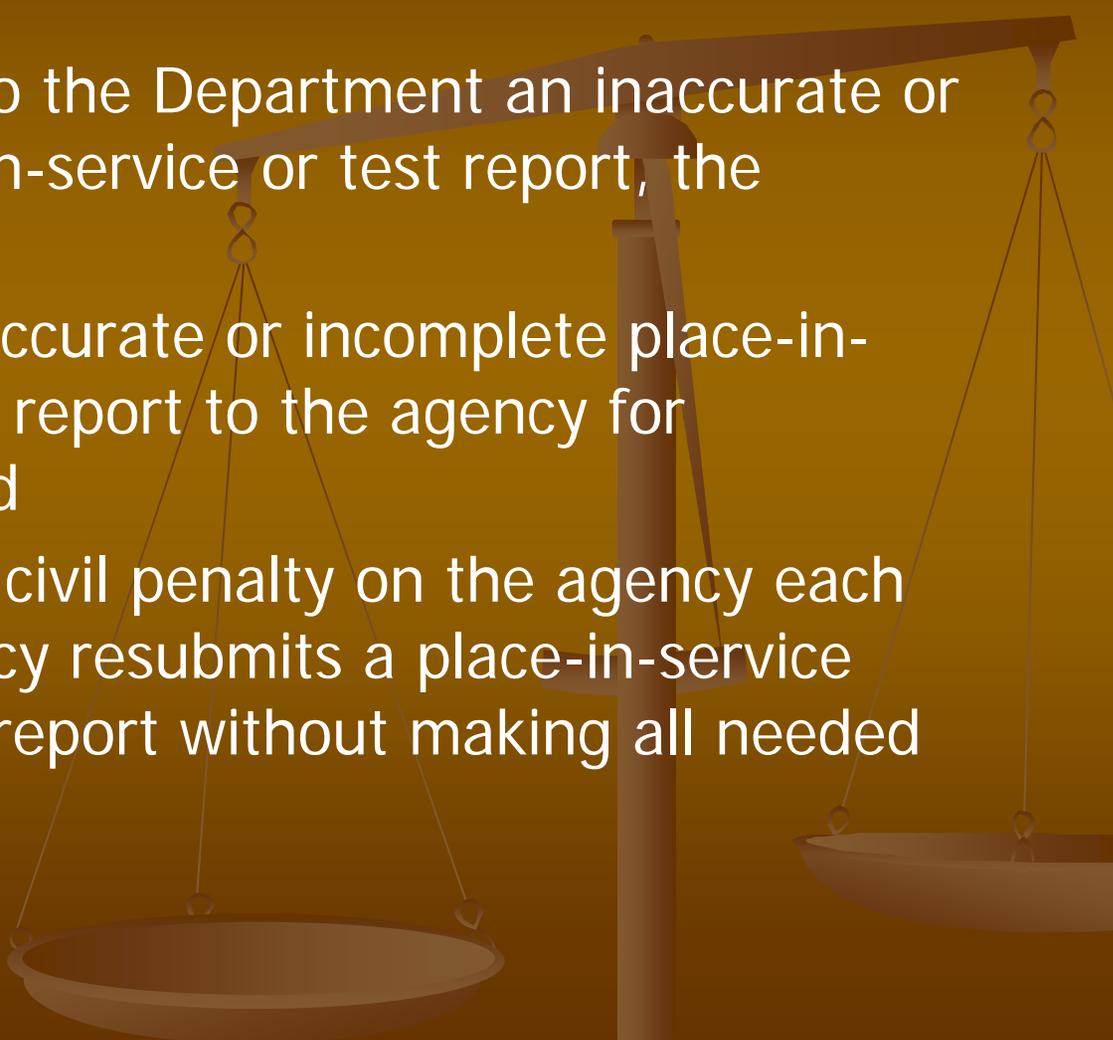
- The Department may deny a license or renewal for:
 1. Providing false or misleading information;
 2. Failure to meet annual certification requirements for standards or testing equipment;
 3. Failure to meet the requirements stated in this Article;
 4. For any reason that would be grounds for suspension, revocation, or refusal to renew.
- 

Grounds for Denying License or renewal;
Disciplinary Action and Certification of
Standards and Testing Equipment
R20-2-603 (G)

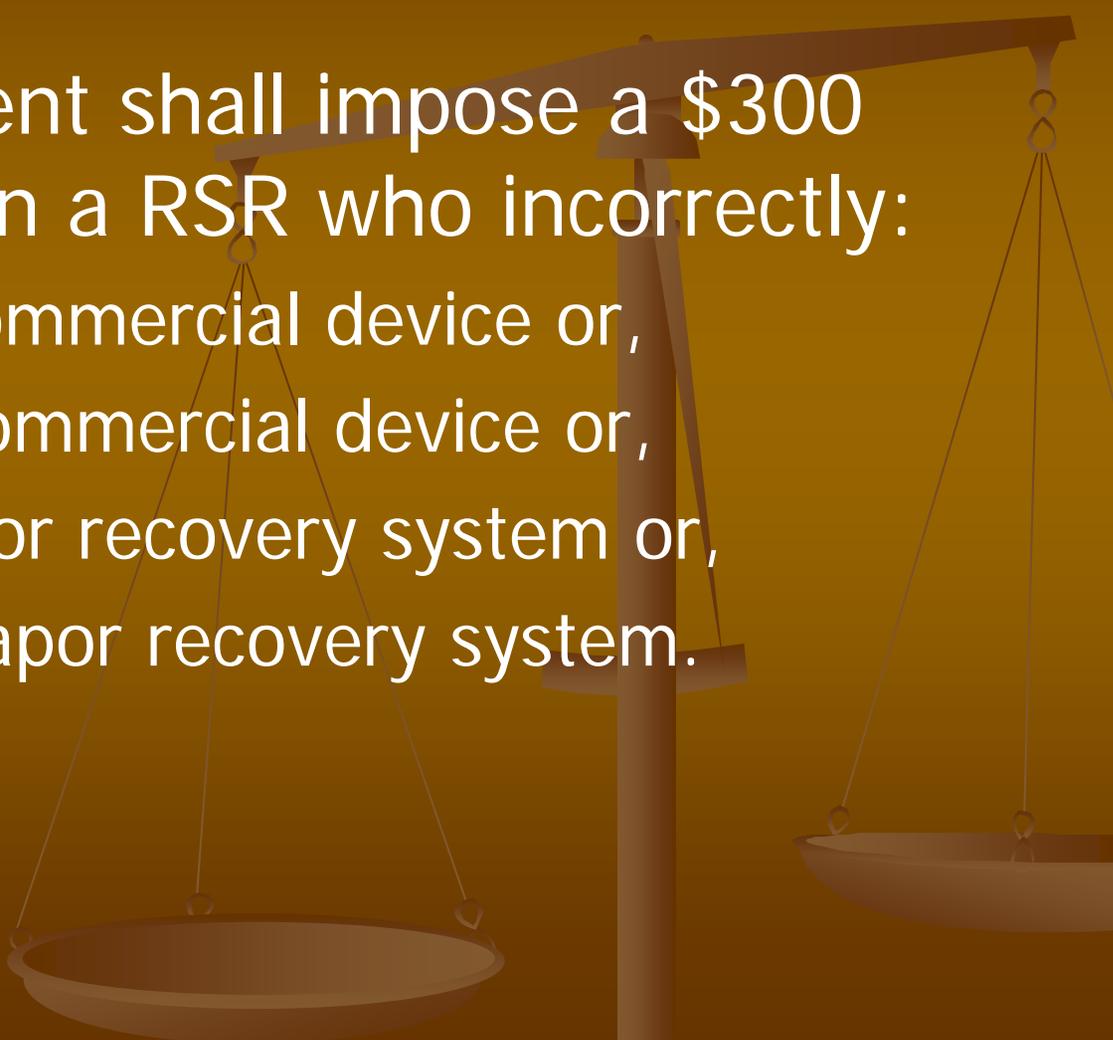
- The Department may suspend, revoke, or refuse to renew a licensee if the applicant is not qualified to perform those duties required or has been found to have violated any provision of A.R.S. Title 41, Chapter 15 or this Chapter.



Administrative Enforcement Action R20-2-104 (M)(1)

- If a RSA submits to the Department an inaccurate or incomplete place-in-service or test report, the Department shall:
 1. Return the inaccurate or incomplete place-in-service or test report to the agency for correction, and
 2. Impose a \$50 civil penalty on the agency each time the agency resubmits a place-in-service report or test report without making all needed corrections.
- 

Administrative Enforcement Action R20-2-104 (M)(1)

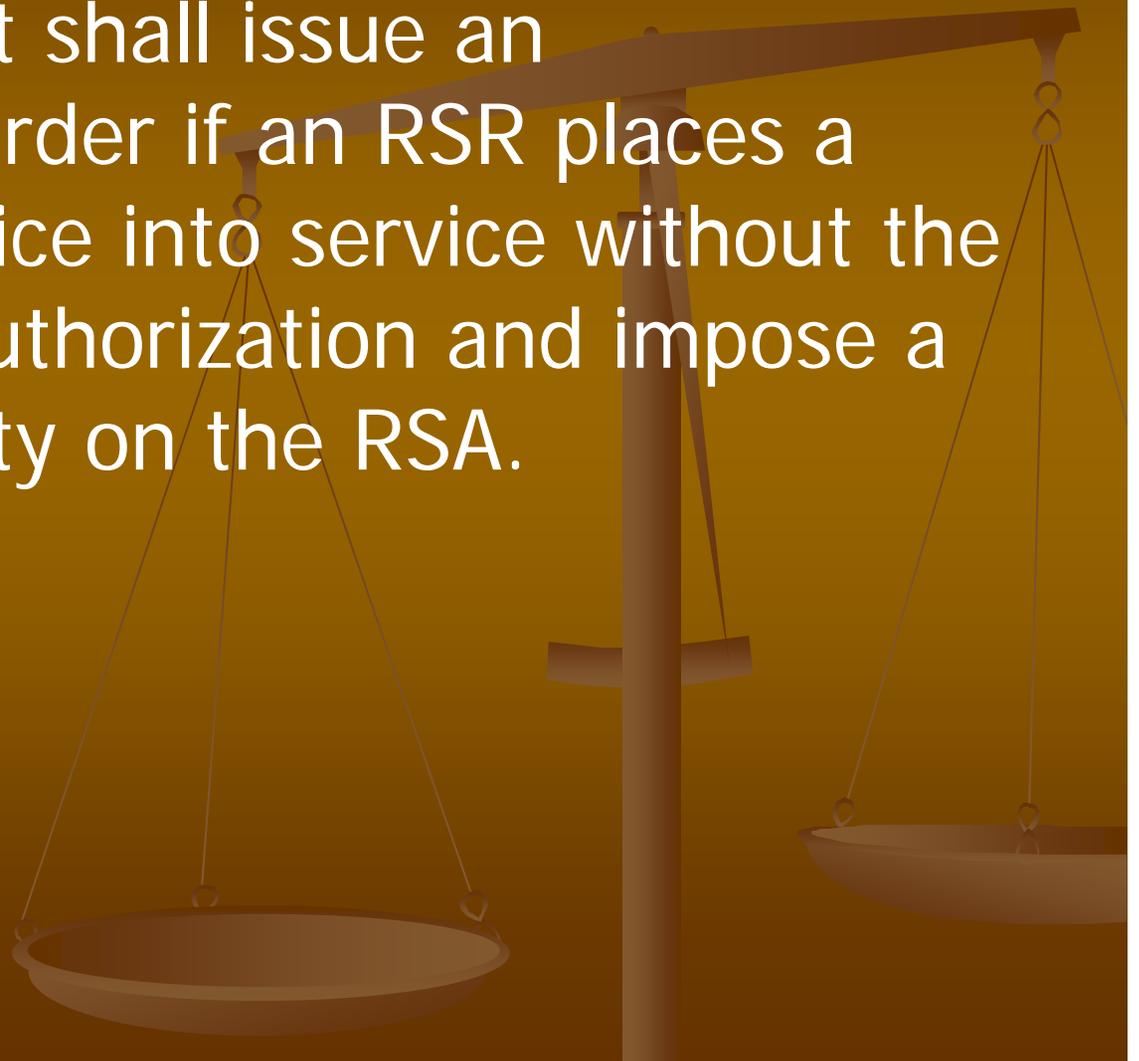
- The Department shall impose a \$300 civil penalty on a RSR who incorrectly:
 1. Installs a commercial device or,
 2. Repairs a commercial device or,
 3. Tests a vapor recovery system or,
 4. Repairs a vapor recovery system.
- 

Administrative Enforcement Action R20-2-104 (M)(3)

- If an unlicensed person represents himself as a RSA, the Department shall:
 1. Issue an administrative order and
 2. Impose a \$500 civil penalty and confiscate the unlicensed person's calibration standards if the administrative order is violated
 3. Deny a RSA license if the person fails to comply with the enforcement action

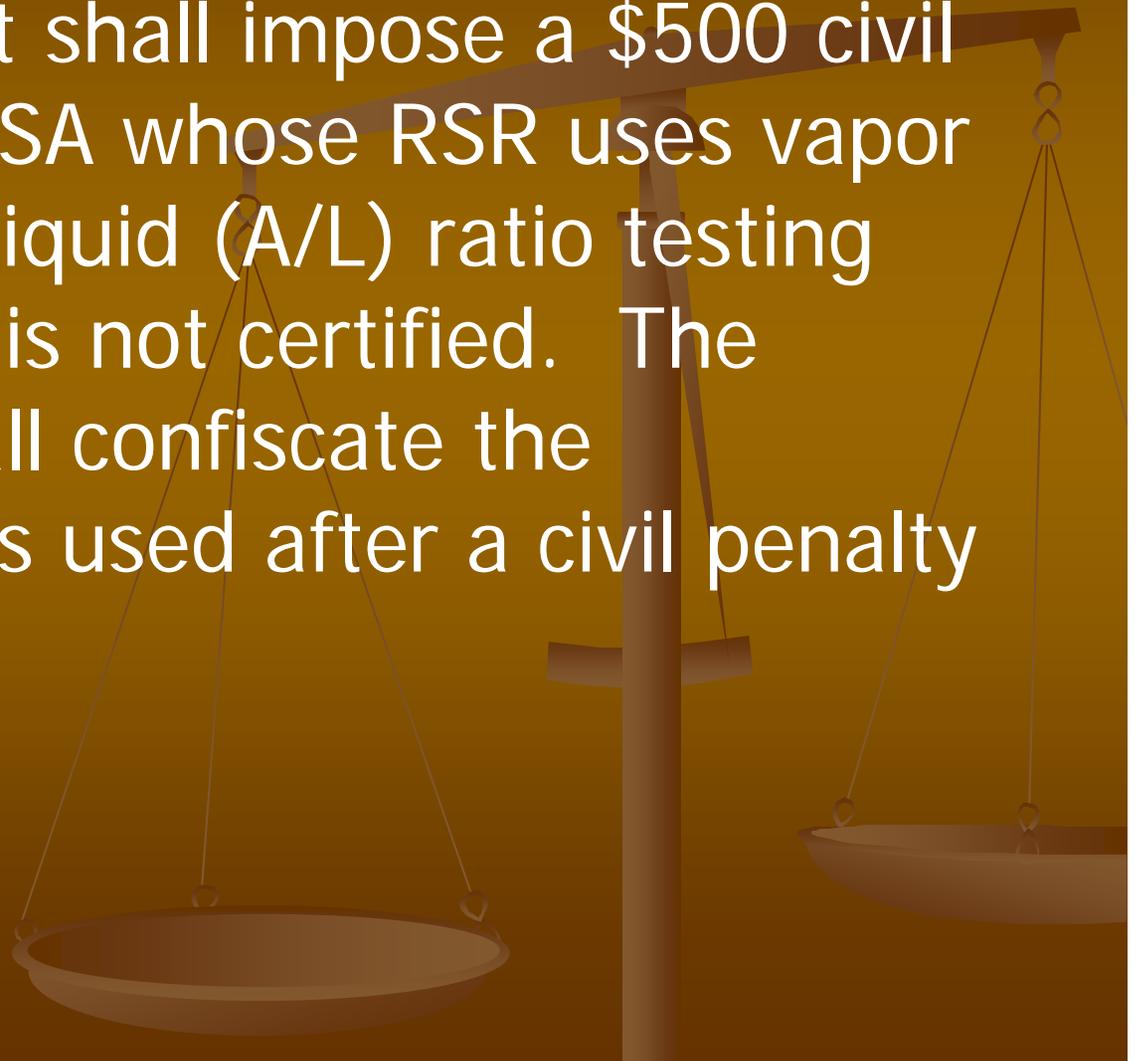
Administrative Enforcement Action R20-2-104 (M)(5)

- The Department shall issue an administrative order if an RSR places a commercial device into service without the Department's authorization and impose a \$500 civil penalty on the RSA.



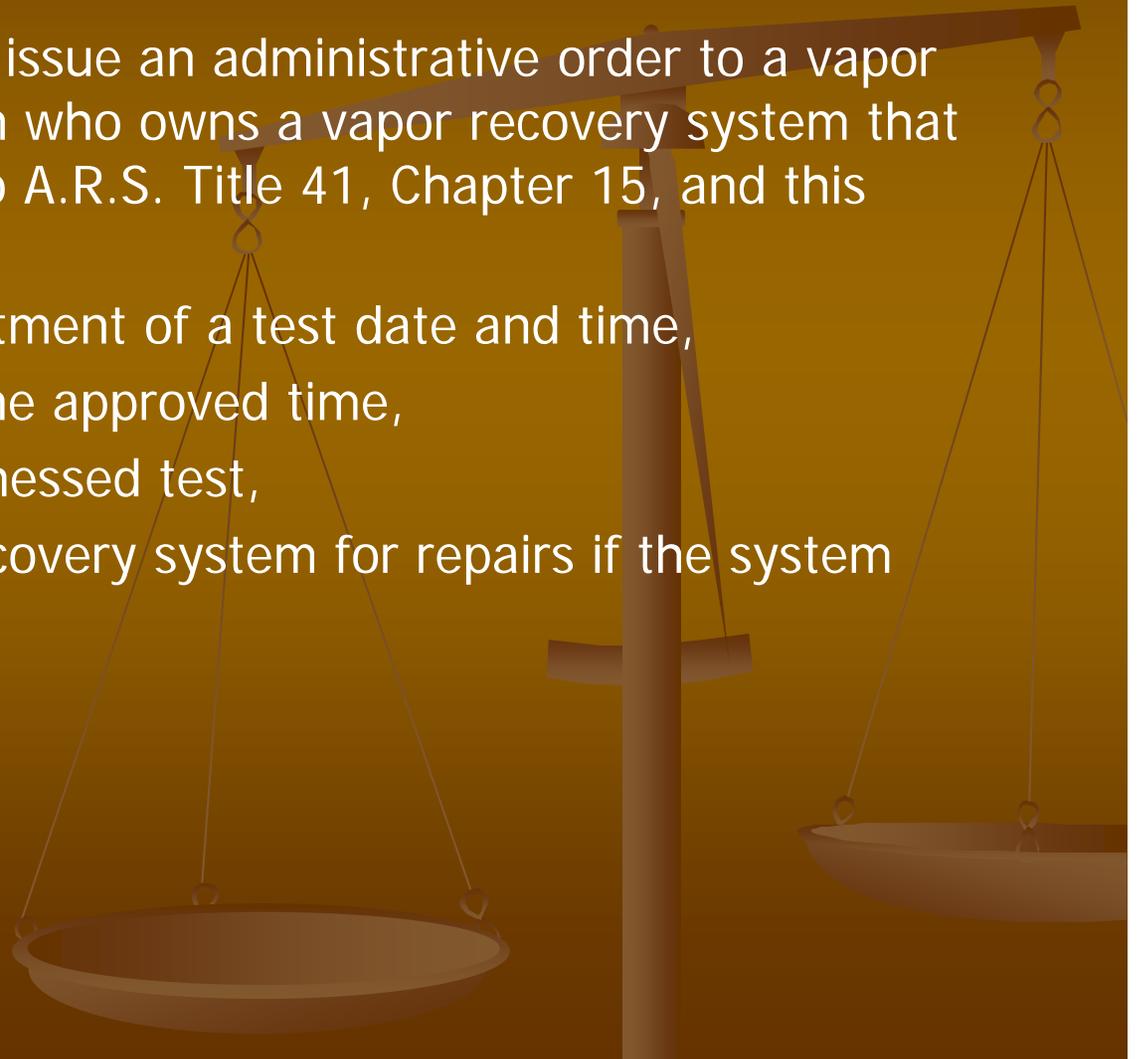
Administrative Enforcement Action R20-2-104 (M)(6)

- The Department shall impose a \$500 civil penalty on an RSA whose RSR uses vapor recovery air-to-liquid (A/L) ratio testing equipment that is not certified. The Department shall confiscate the equipment if it is used after a civil penalty is issued.



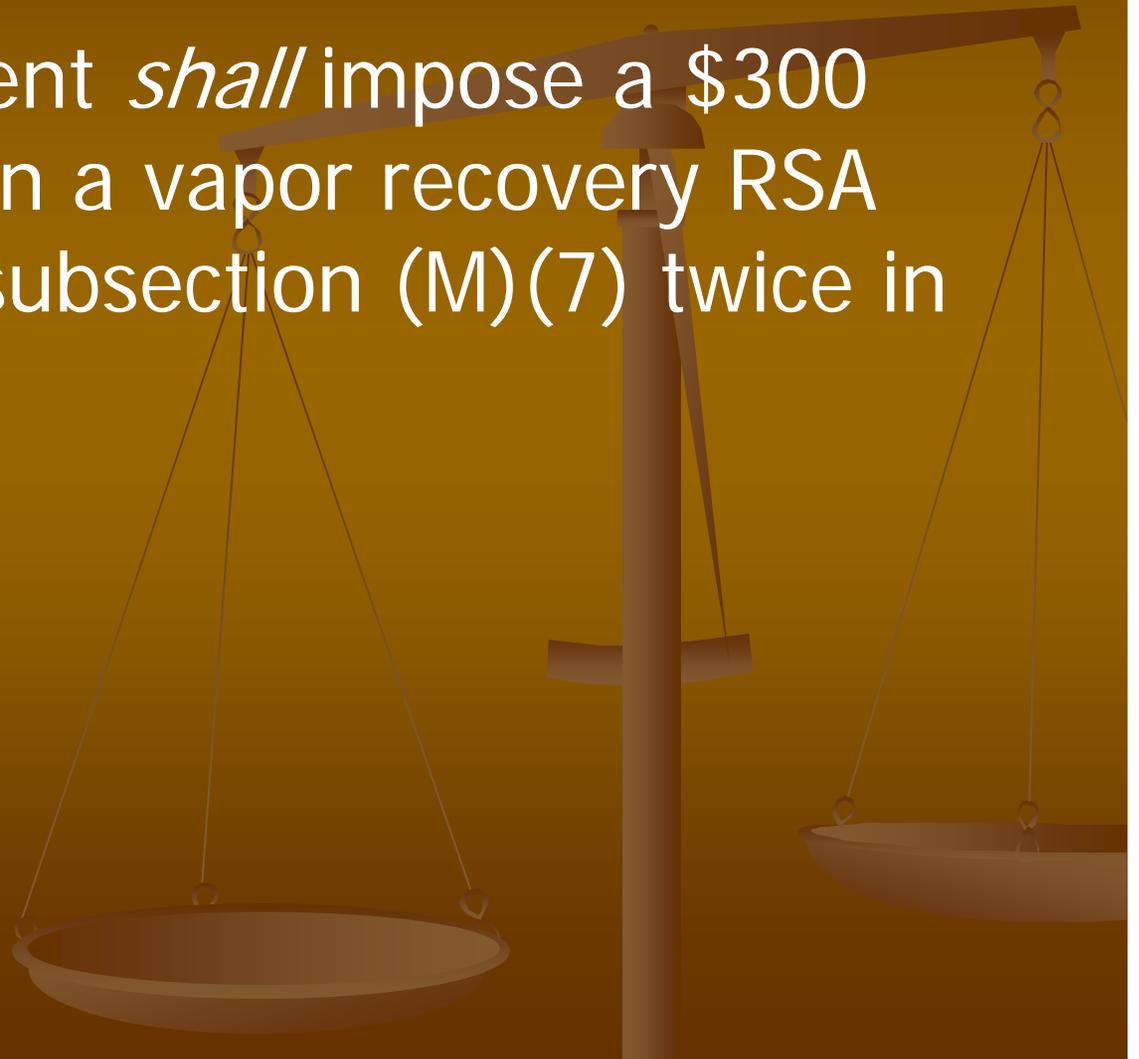
Administrative Enforcement Action R20-2-104 (M)(7)

- The Department *shall* issue an administrative order to a vapor recover RSA or person who owns a vapor recovery system that does not, according to A.R.S. Title 41, Chapter 15, and this Chapter:
 1. Notify the Department of a test date and time,
 2. Begin a test at the approved time,
 3. Appear for a witnessed test,
 4. Close a vapor recovery system for repairs if the system fails, or
 5. Perform a test



Administrative Enforcement Action R20-2-104 (M)(8)

- The Department *shall* impose a \$300 civil penalty on a vapor recovery RSA that violates subsection (M)(7) twice in 12 months.



Administrative Enforcement Action R20-2-104 (M)(10)

- If a RSR determines that a vapor recovery system or component is not in compliance with A.R.S. Title 41, Chapter 15, or this chapter, the RSR shall:
 - Secure the non-compliant vapor recovery system or component from use before the RSR leaves the vapor recovery site or until the system or component passes the tests required by R20-2-910;
 - Notify the Department of the secured, non-compliant vapor recovery system or component before leaving the site; and
 - Notify the Department of the time of the test required by R20-2-910 by 6:00 am of the day after the non-compliant vapor recovery system or component is secured or one hour before the test, which ever is sooner.

Administrative Enforcement Action

R20-2-104 (M)(11)

- If a RSR fails to comply with subsection (M)(10)(b) or (M)(10)(c), the Department shall:
 1. Impose a \$300 civil penalty on the RSR.
 2. Issue an administrative order, if the RSR is penalized under this subsection three times in 12 months, requiring the RSR to take and pass the licensing competency examination; and
 3. Suspend or revoke the license of the RSA employing the RSR does not comply with an order issued under subsection (M)(11)(b)

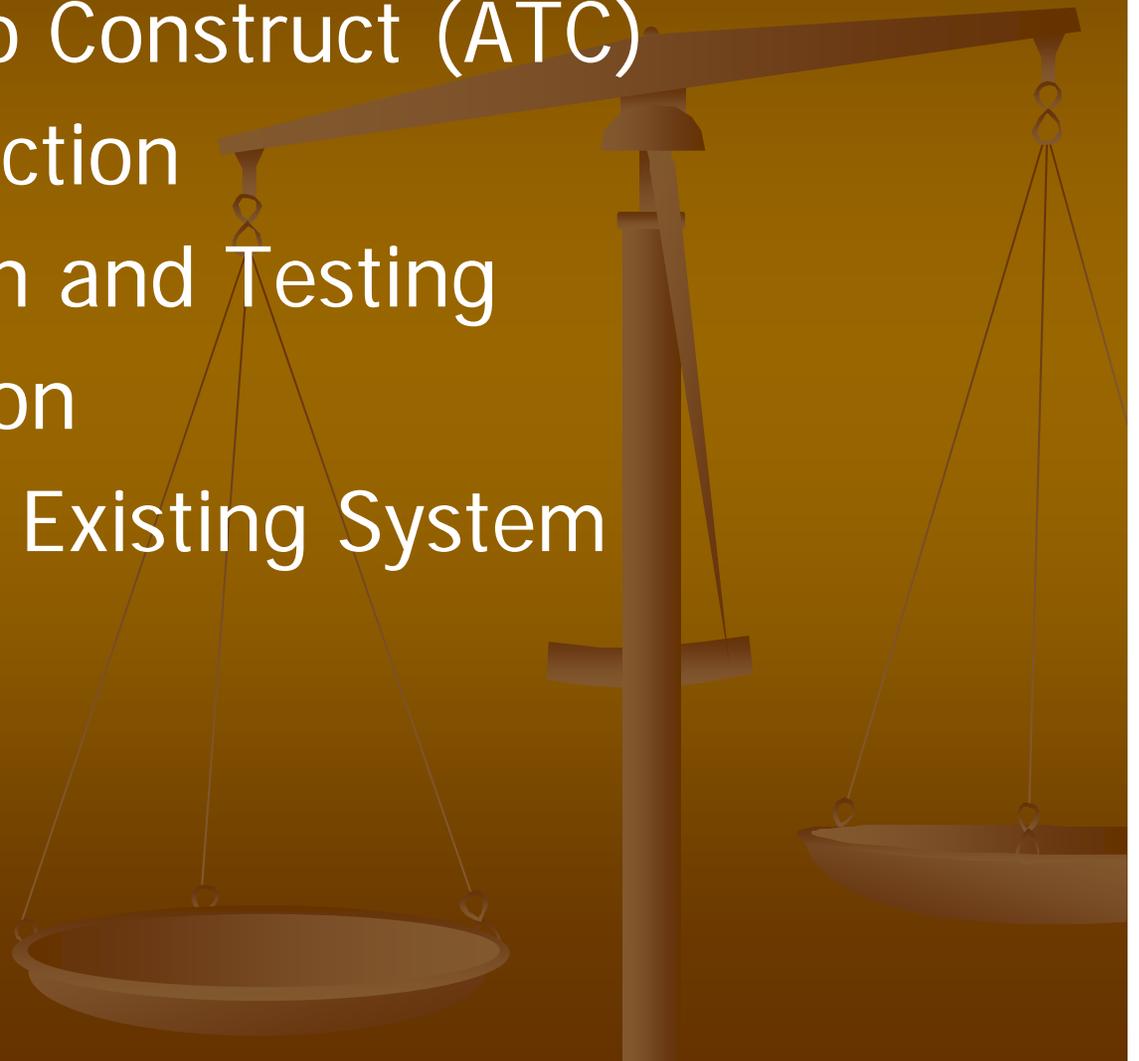
SOP

- SOP VR305 to incorporate requirements for Vacuum Assist and Balance Systems
- SOP 306 obsolete



Program Permitting and Testing Requirements

- Authorization To Construct (ATC)
- Pre-burial Inspection
- Initial Inspection and Testing
- Annual Inspection
- Modifications to Existing System



Program Permitting and Testing Requirements

R20-2-904

■ Authority To Construct (ATC)

- Cannot start construction without a permit issued by AZDWM.
- Major Modification is considered to be:
 - replacing a storage tank
 - adding or replacing underground piping, piping within the dispenser, or a dispenser at an existing site, except if correcting unforeseen damage.
 - Replacing an existing system with another type.

Program Permitting and Testing Requirements

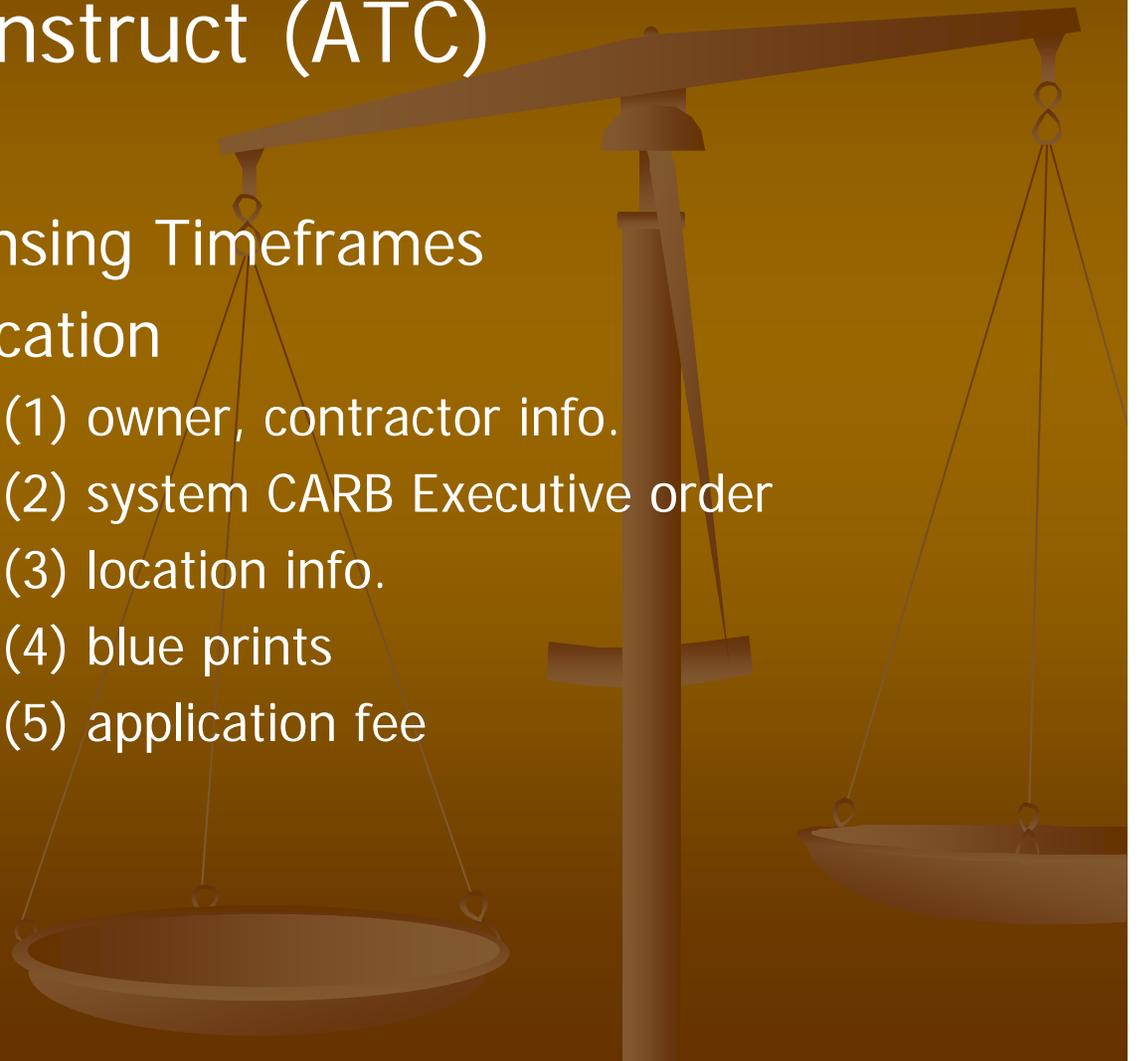
■ Authority To Construct (ATC)

■ Process

■ Subject to Licensing Timeframes

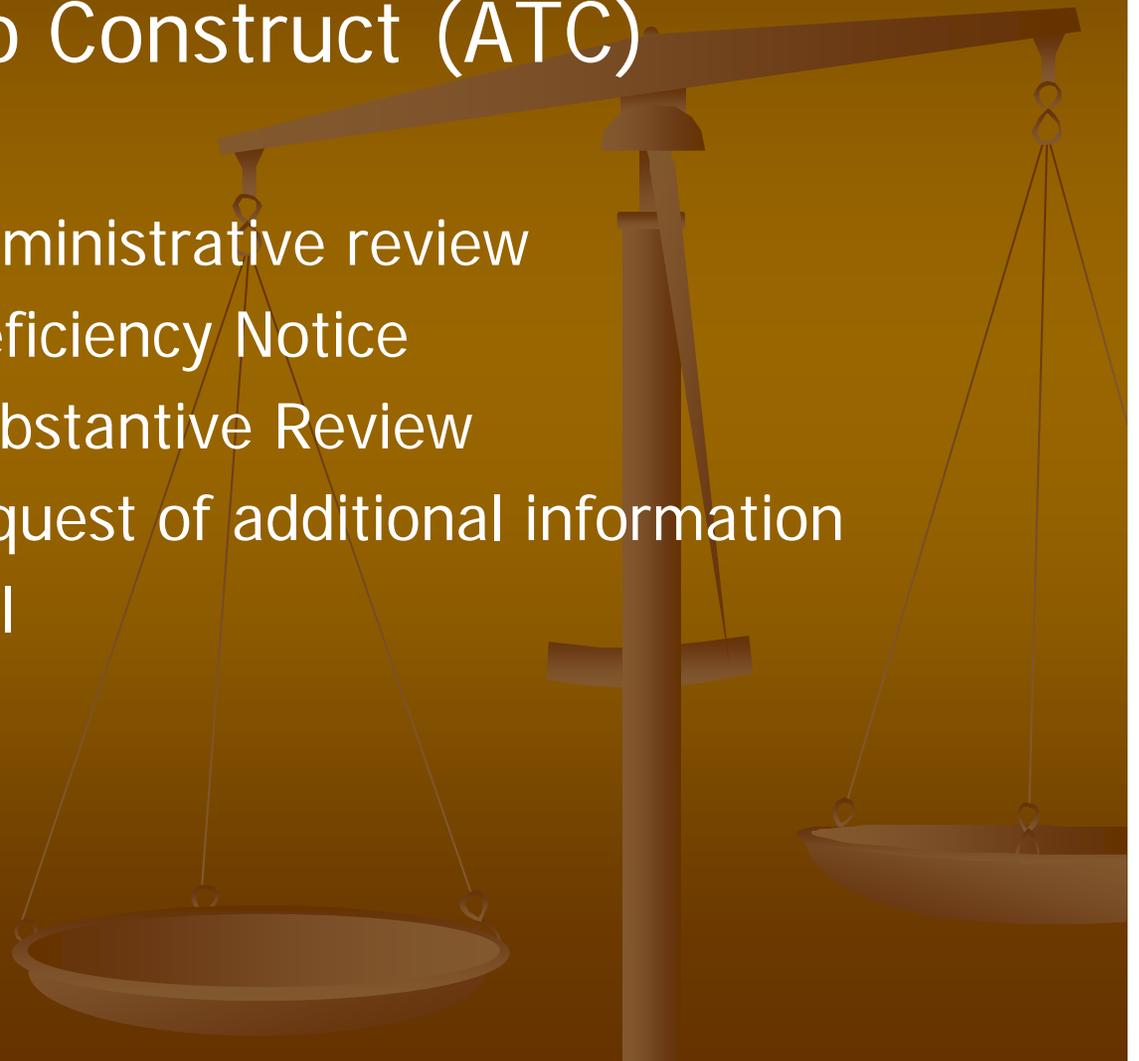
■ Complete Application

- R20-2-904 (C)(1) owner, contractor info.
- R20-2-904 (C)(2) system CARB Executive order
- R20-2-904 (C)(3) location info.
- R20-2-904 (C)(4) blue prints
- R20-2-904 (C)(5) application fee



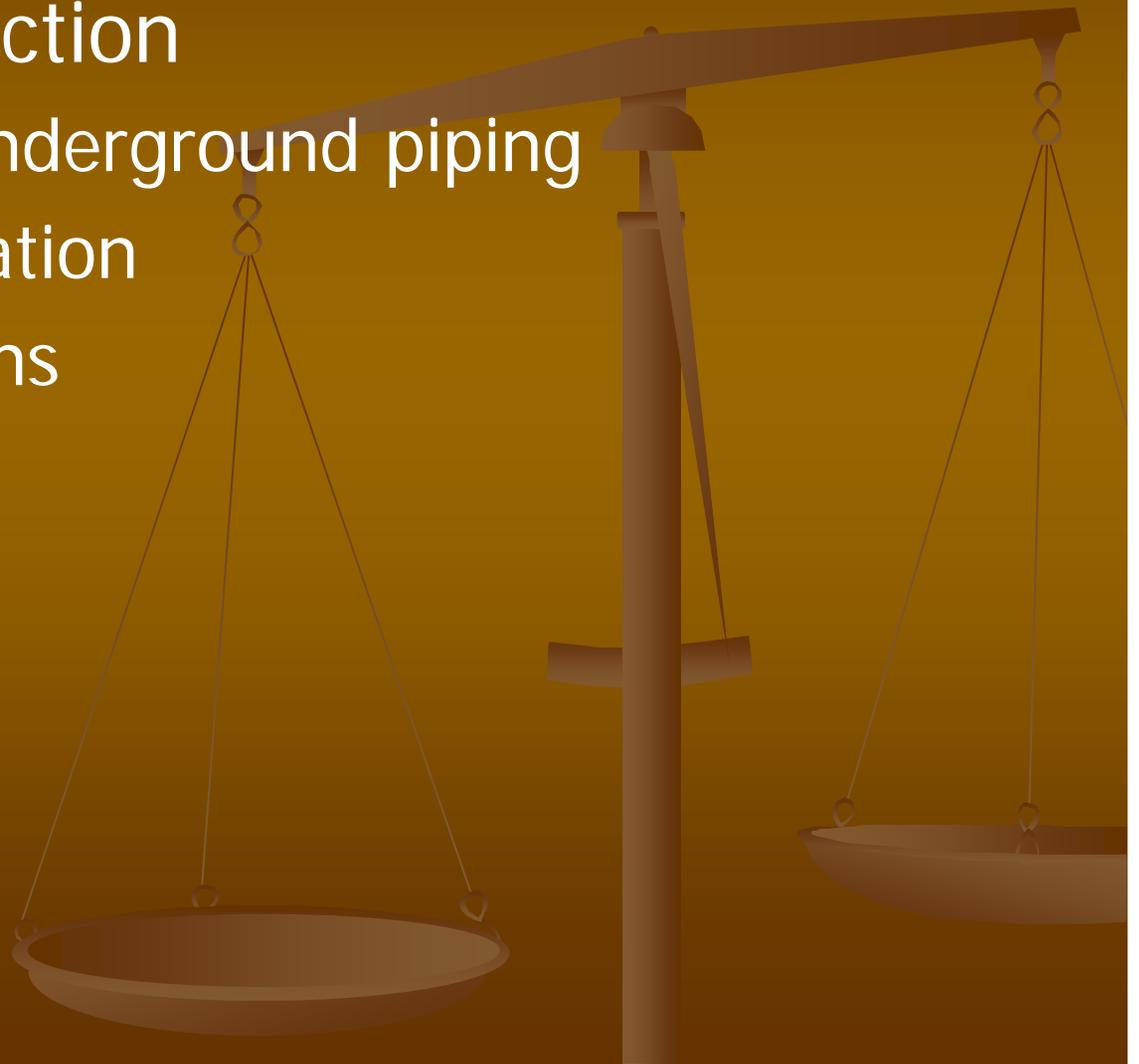
Program Permitting and Testing Requirements

- Authorization To Construct (ATC)
 - Timeframes
 - 10 days for Administrative review
 - 20 days for Deficiency Notice
 - 30 days for Substantive Review
 - 20 days for request of additional information
 - 40 days overall



Program Permitting and Testing Requirements

- Pre-burial Inspection
 - Inspection of underground piping
 - Piping configuration
 - Tank connections

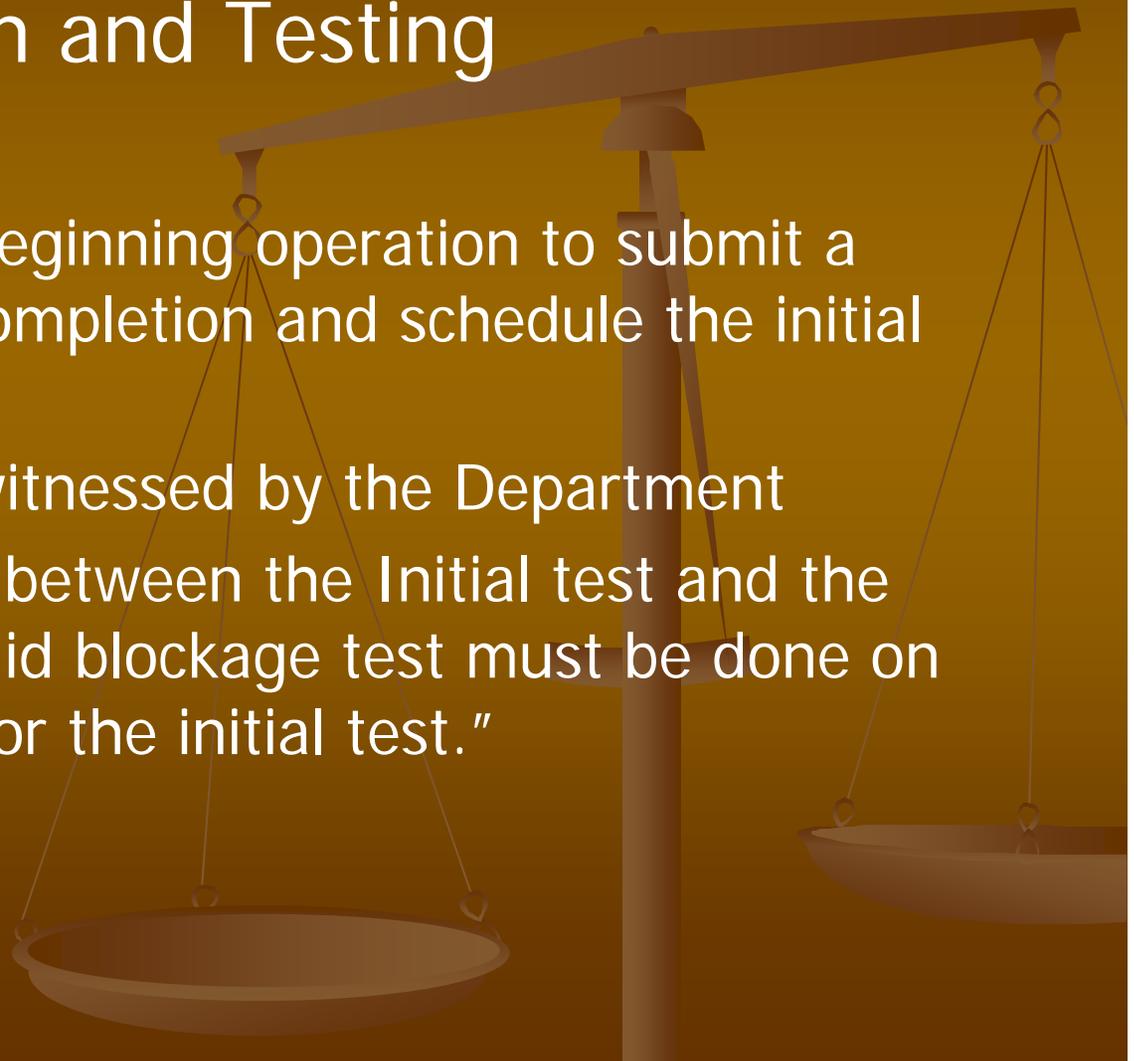


Program Permitting and Testing Requirements

■ Initial Inspection and Testing

■ R20-2-905

- 10 days from beginning operation to submit a Certificate of completion and schedule the initial test.
- Test must be witnessed by the Department
- One difference between the Initial test and the annual is, "Liquid blockage test must be done on all dispensers for the initial test."

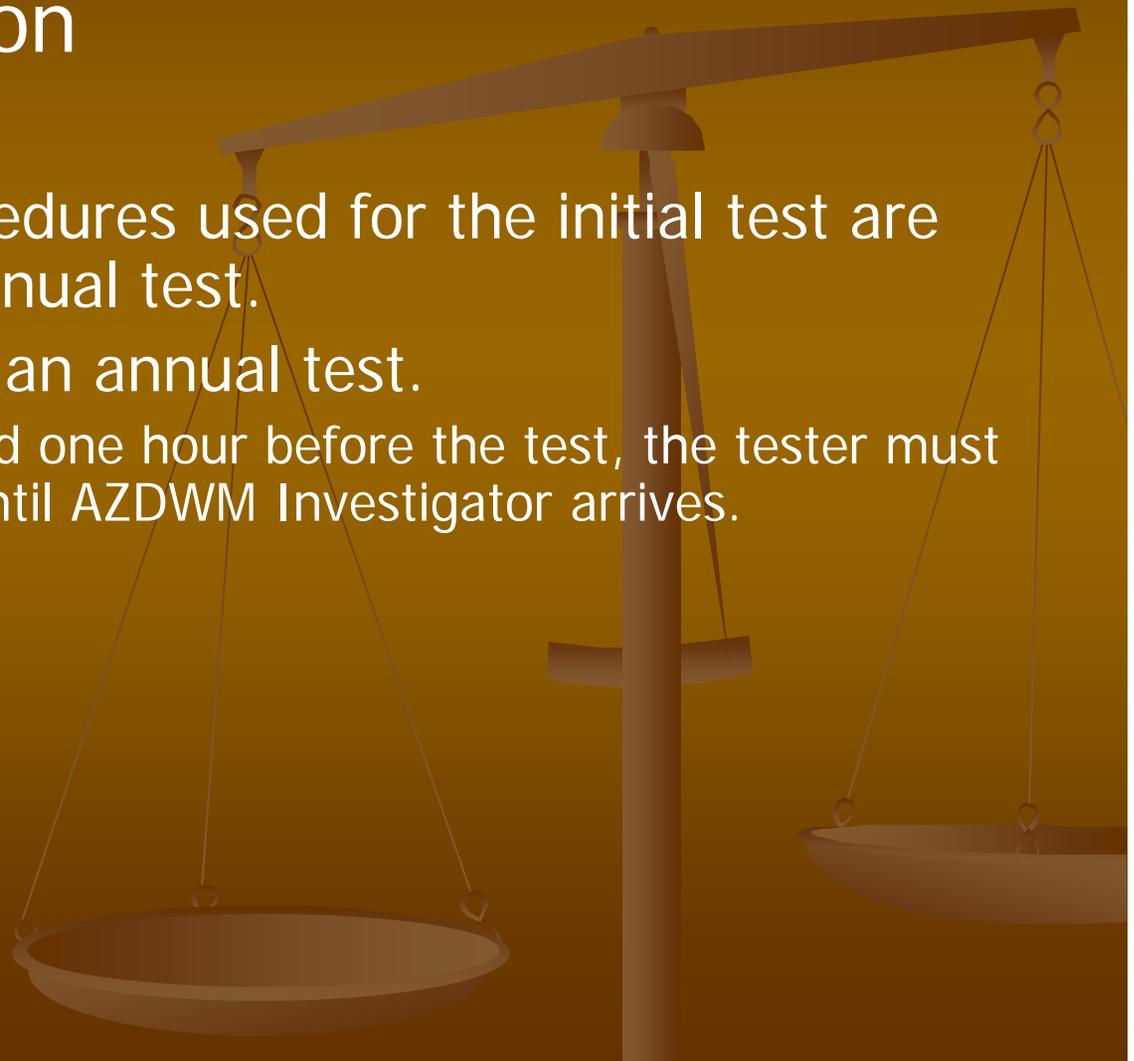


Program Permitting and Testing Requirements

■ Annual Inspection

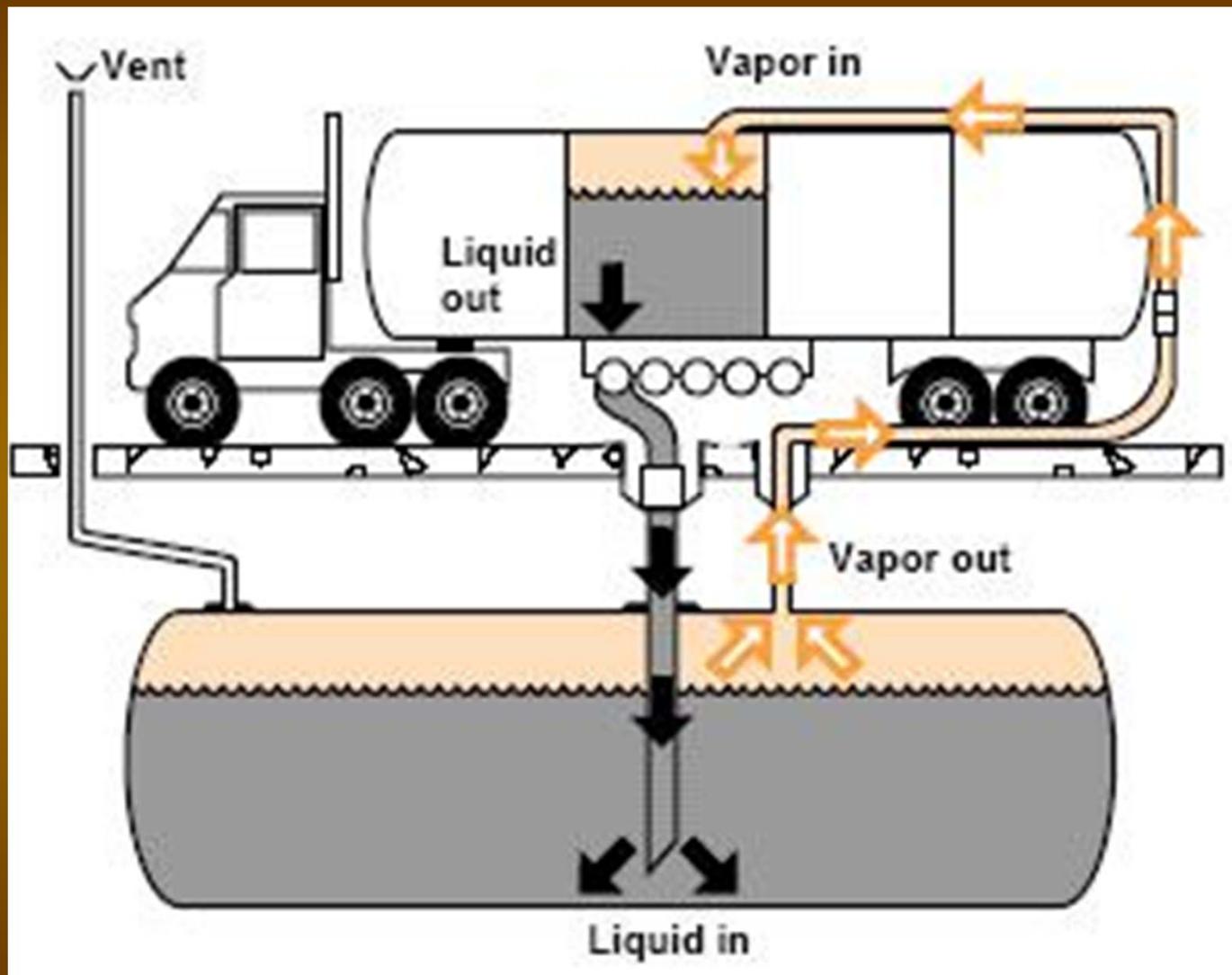
■ R20-2-910

- The same procedures used for the initial test are used for the annual test.
- Cancellation of an annual test.
 - When canceled one hour before the test, the tester must stay on site until AZDWM Investigator arrives.



Technical Training





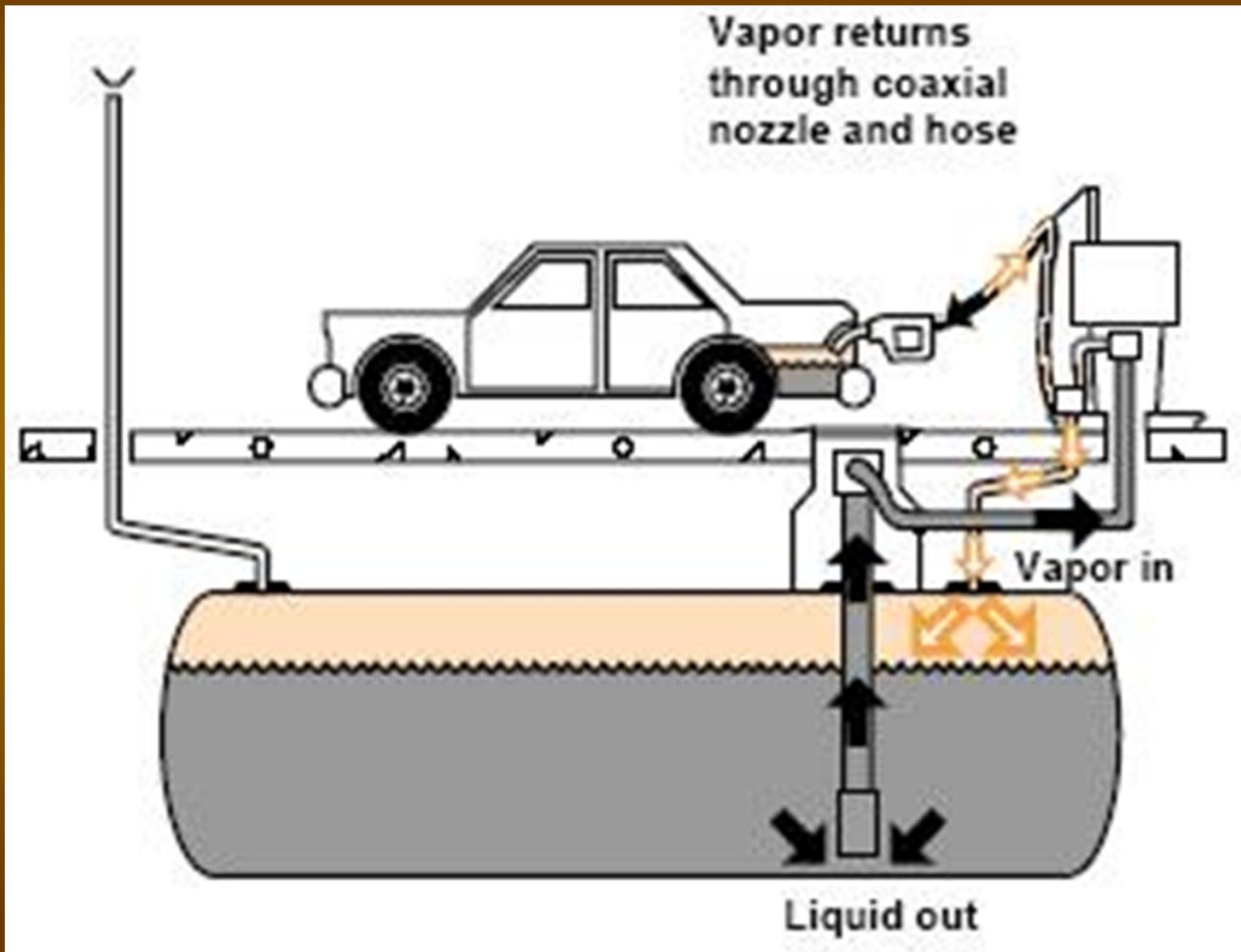
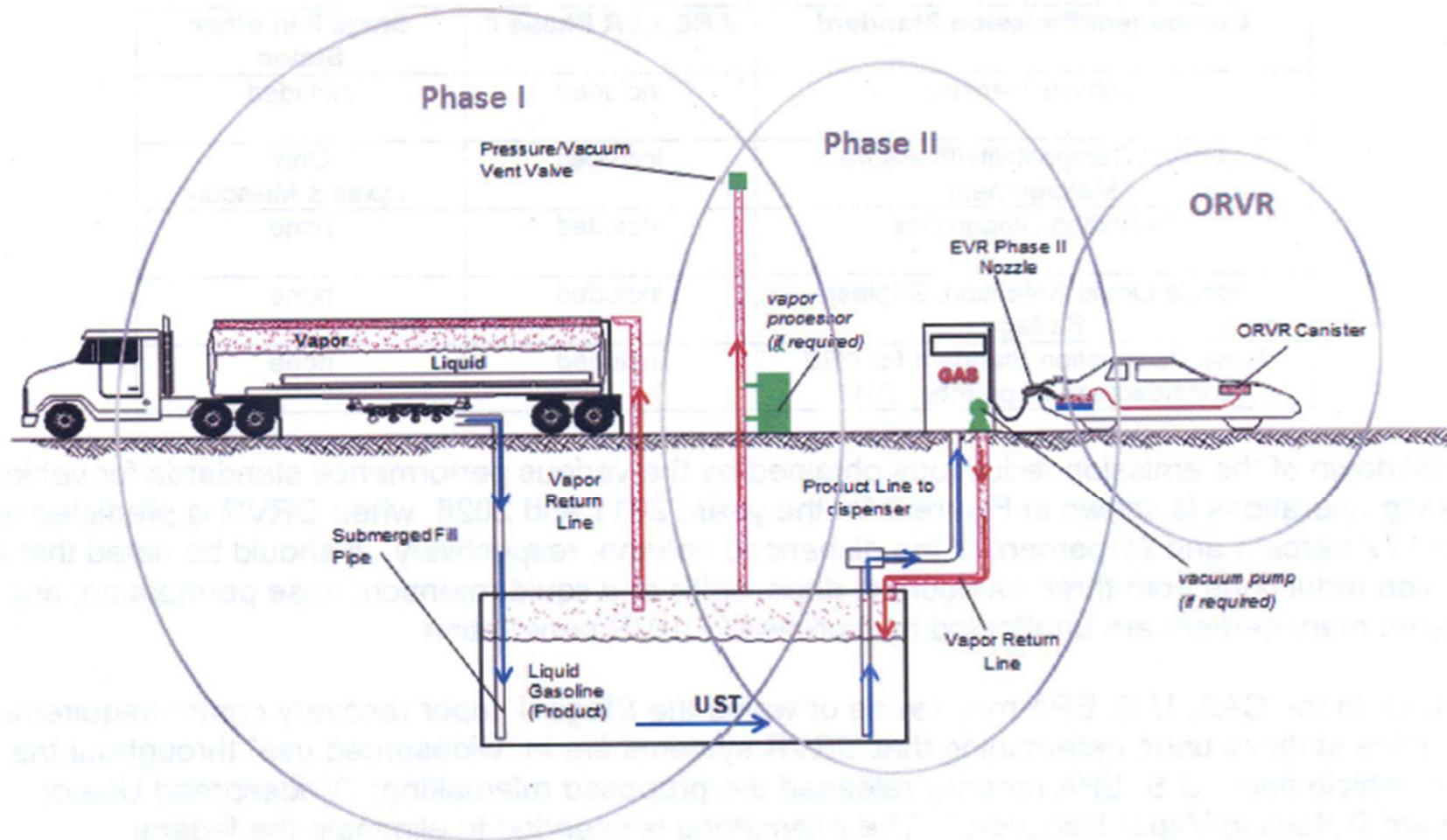


Figure 1

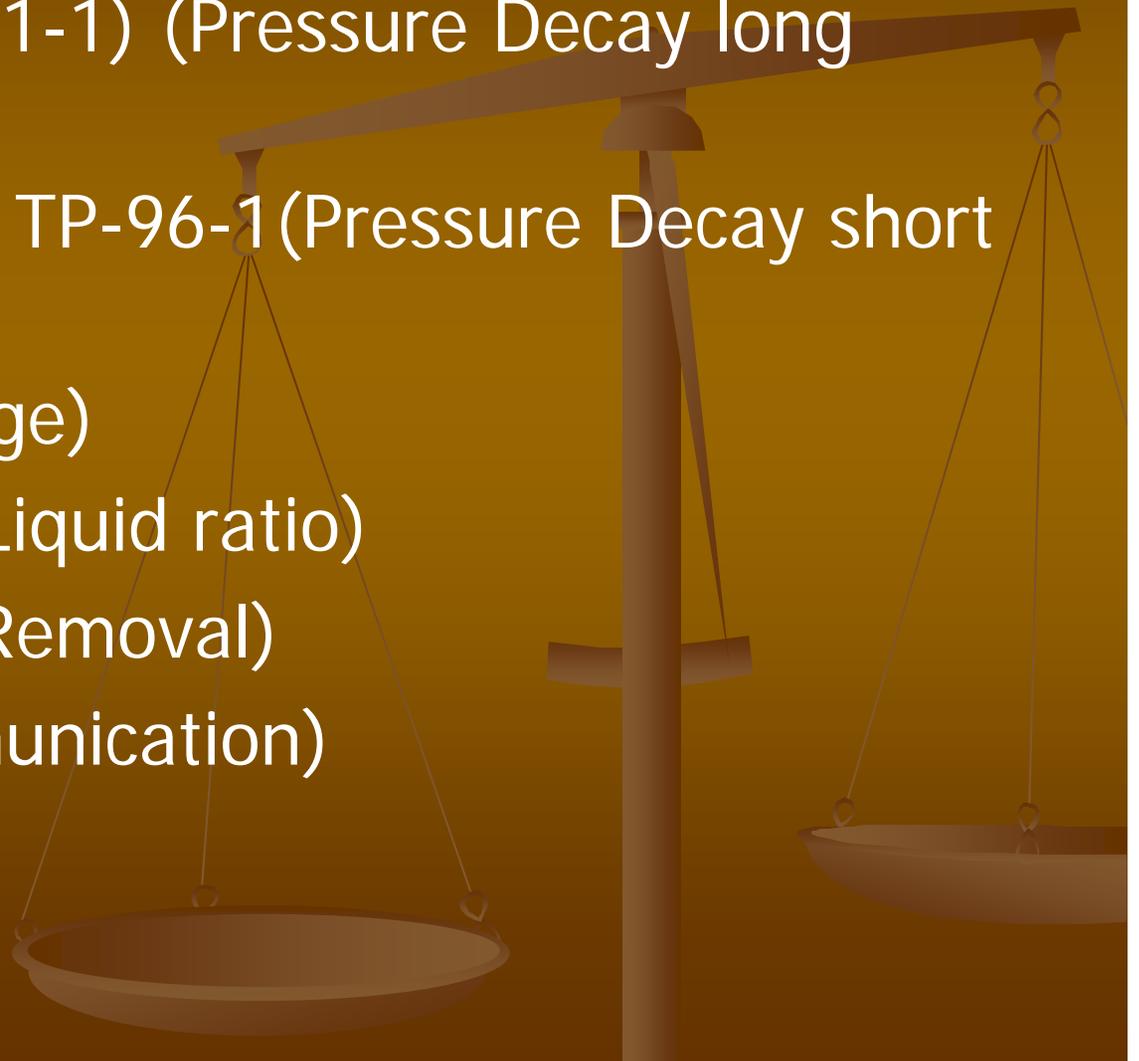
Phase I, Phase II & ORVR Vapor Recovery Operations
at California Service Stations



Test Procedures

R20-2-901

- Appendix J.5 (TP91-1) (Pressure Decay long test)
- San Diego County TP-96-1 (Pressure Decay short test)
- TP- 201.4 (Blockage)
- TP- 201.5 (Air to Liquid ratio)
- TP-201.6 (Liquid Removal)
- TP-201.2B (Communication)



Inspection

- R20-2-907



Stage I

- Inspection of the Stage I.
- Dust Cap
- Dry Break
- Spill Containment
- Swivel adaptor



System Type

- Balance System
- Vapor Assist System

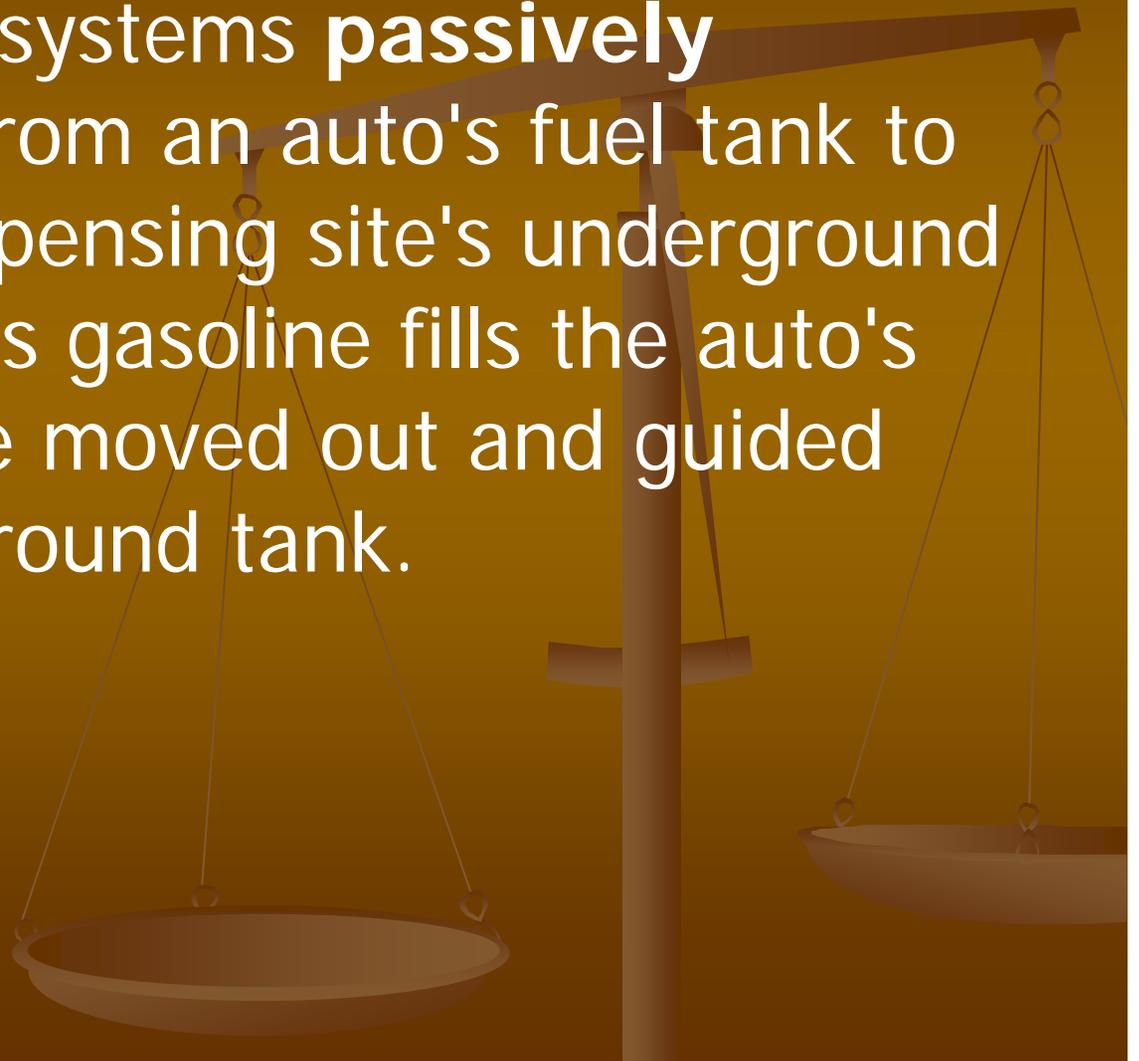


Balance System

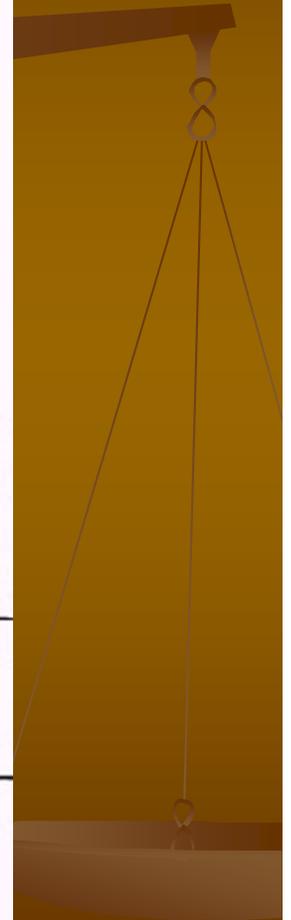
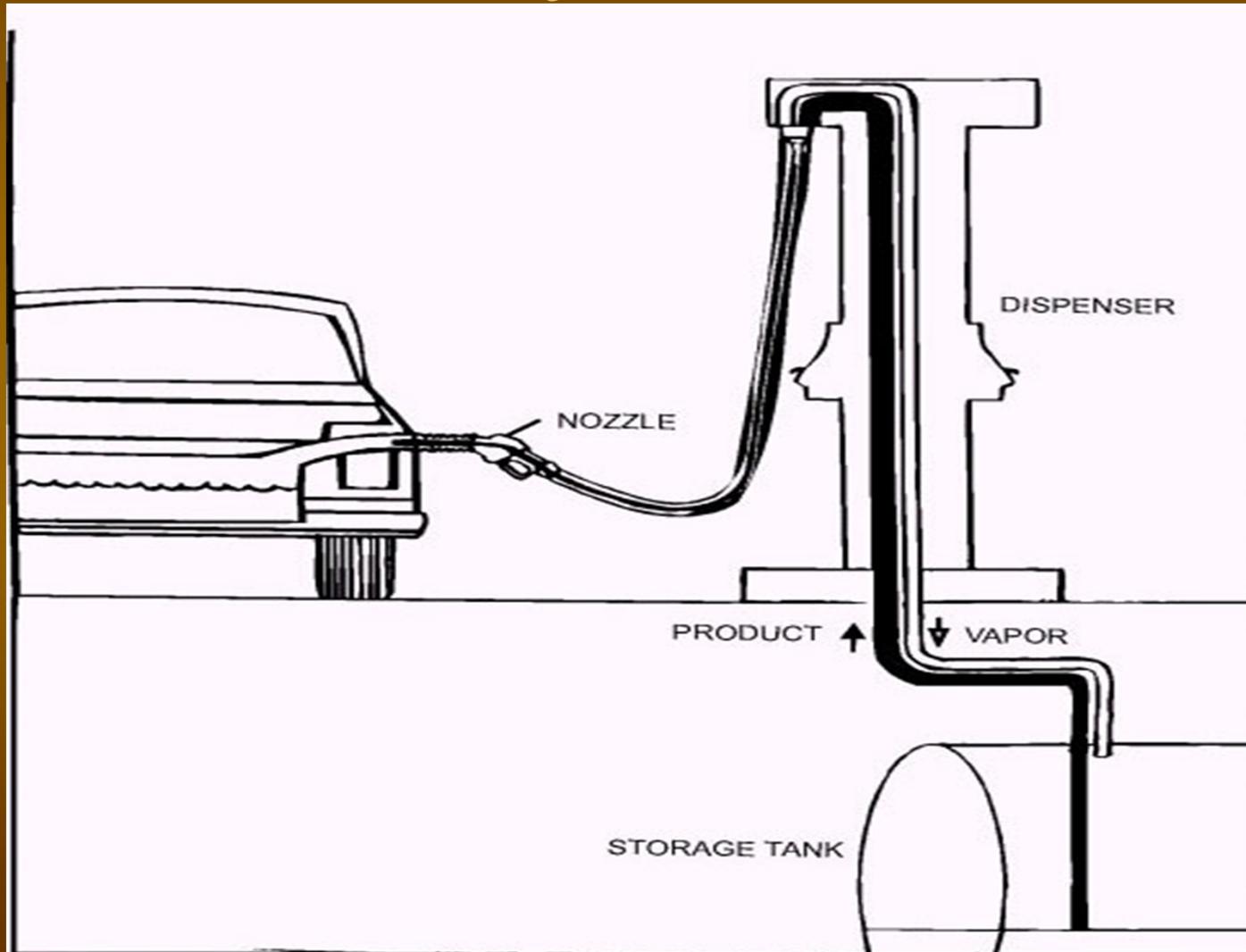


Balance System

- Vapor recovery systems **passively** transfer vapor from an auto's fuel tank to the gasoline dispensing site's underground storage tank . As gasoline fills the auto's tank, vapors are moved out and guided into the underground tank.

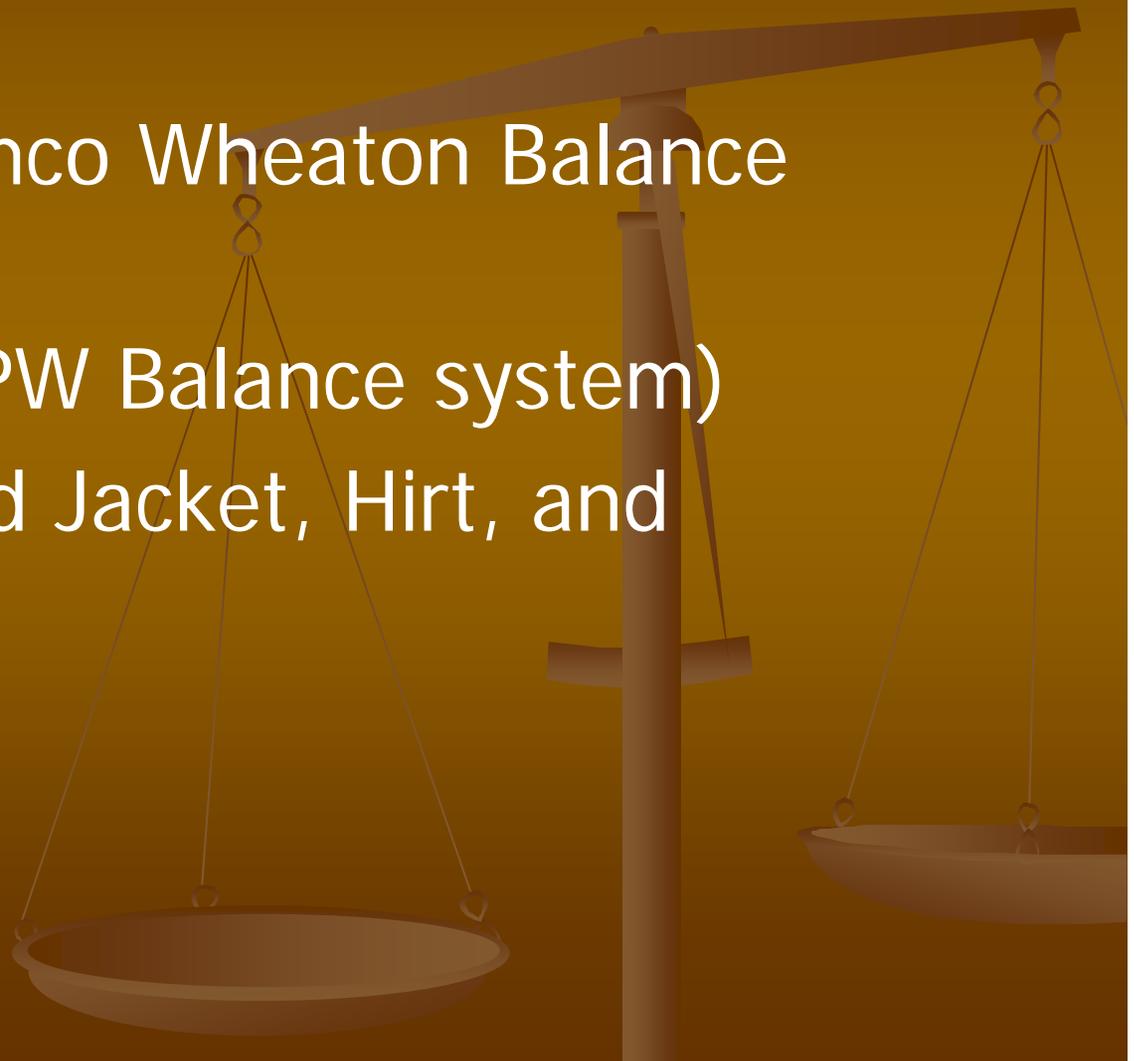


Basic Operation of a Balance System



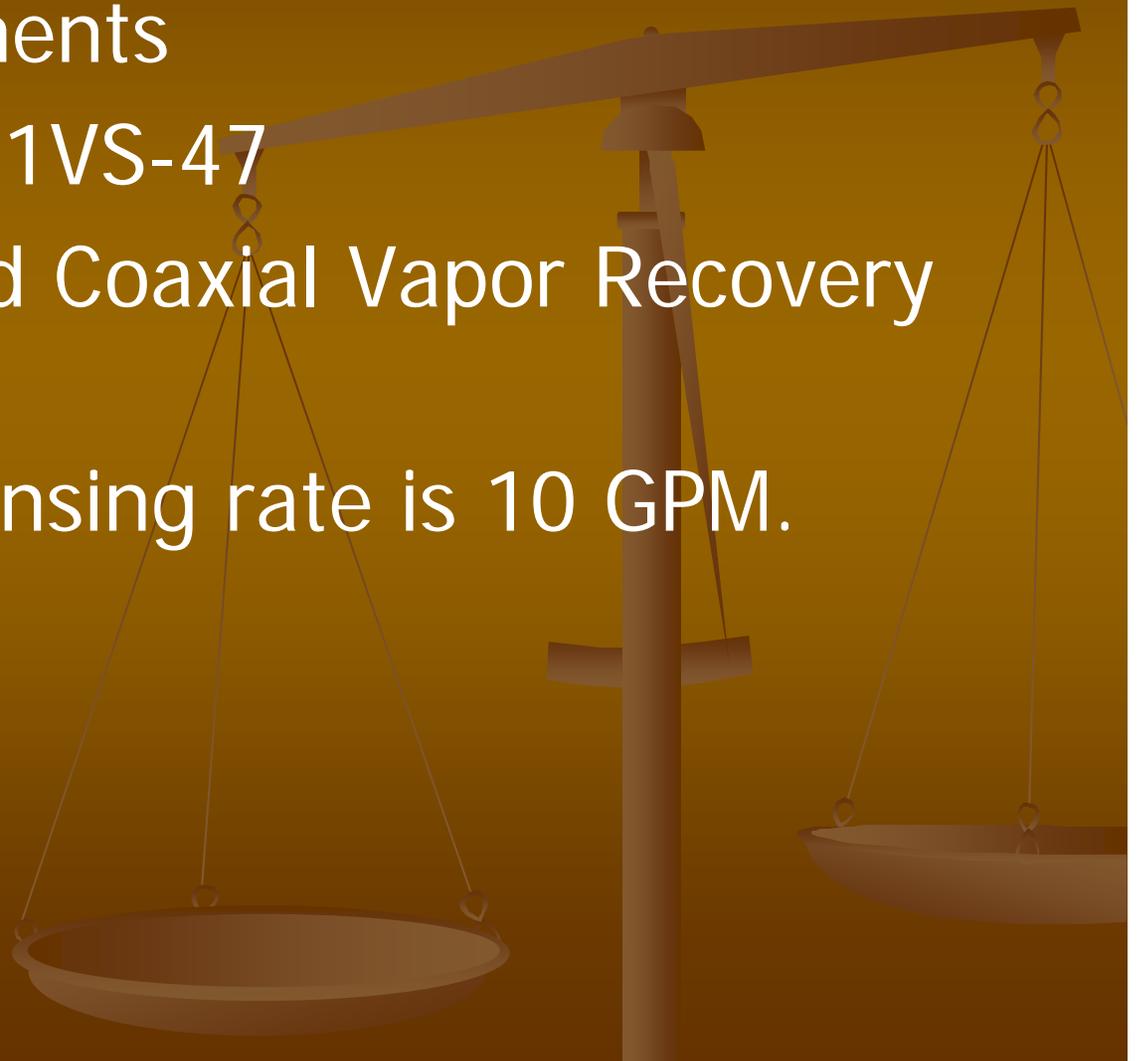
Examples of Applicable CARB Executive Orders for Balance Systems

- G-70-17-AD (Emco Wheaton Balance system)
- G-70-36-AD (OPW Balance system)
- G70-52-AM (Red Jacket, Hirt, and Balance)



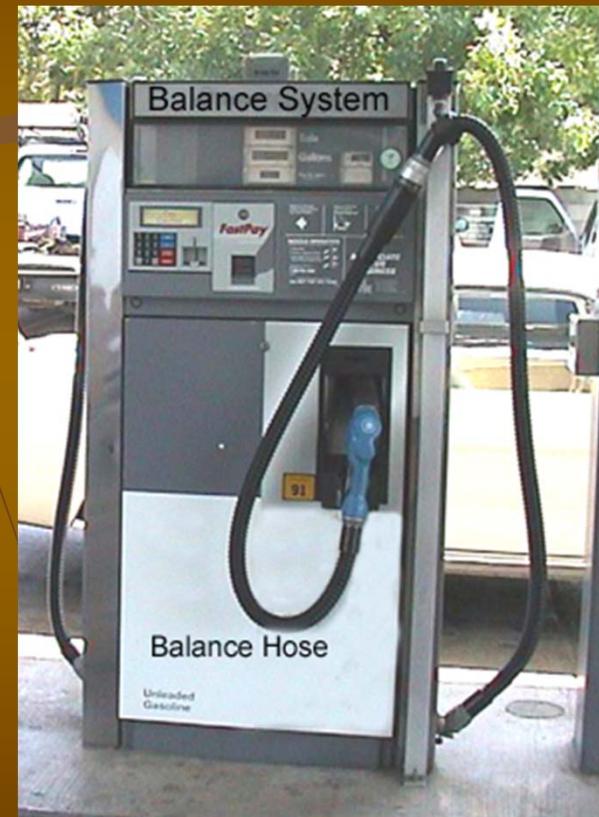
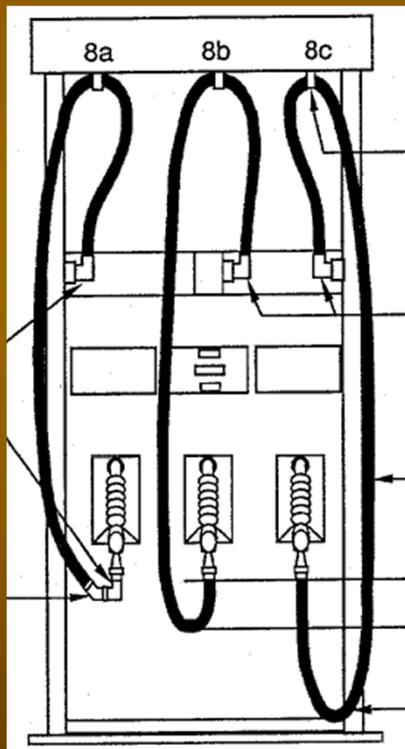
G-70-36-AD (OPW Balance system)

- System Components
- Nozzle – OPW 11VS-47
- Hose – Standard Coaxial Vapor Recovery Hose
- Maximum Dispensing rate is 10 GPM.



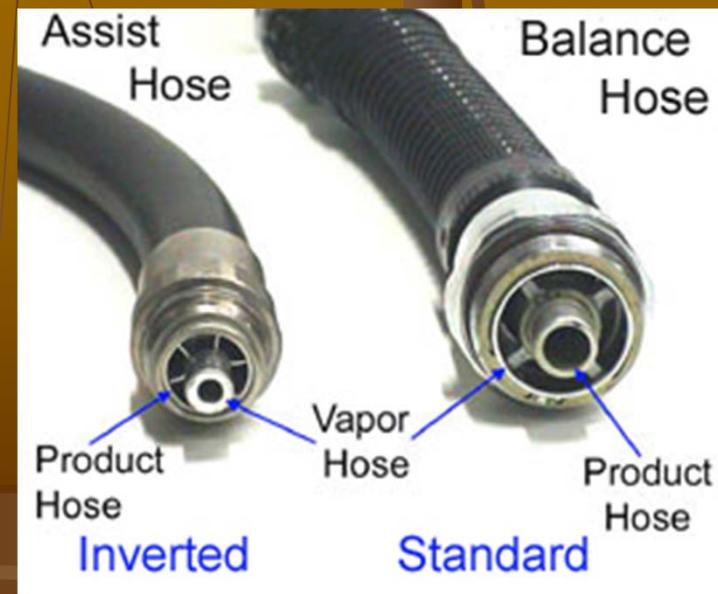
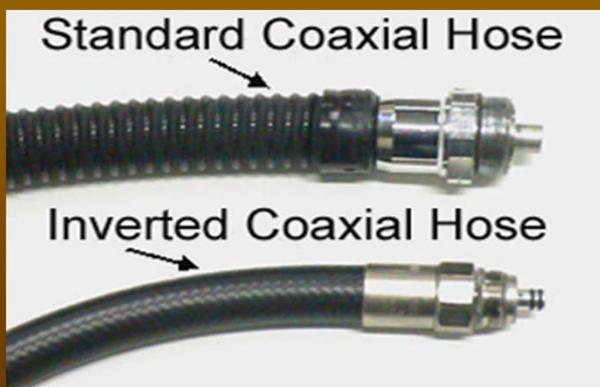
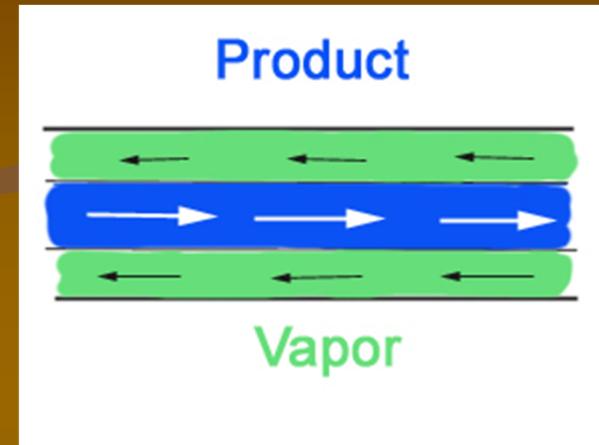
Balance Dispenser

- System Identification



Vapor and Product Flow

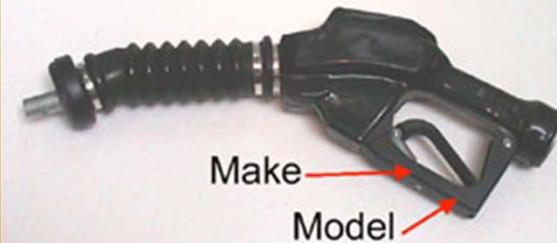
- Balance System:
 - Product flow through the vapor path.
 - Hose has external coaxial hose structure.



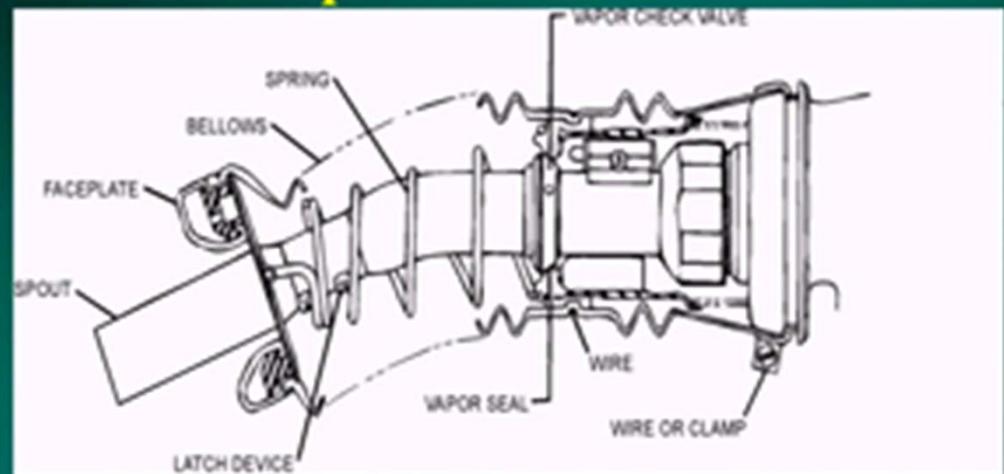
Balance Nozzle

- Note the function of the nozzle. It has a check valve in it that must be suppressed in order to function.
- This then allows product to flow through the nozzle.

OPW Balance Nozzle



Balance Nozzle with Vapor Check Valve



Testing Balance Systems



Pre-test Inspection

- Need to check the following:
 - Spill buckets
 - Dry Break
 - Vent Caps
 - General condition of the hoses and nozzles.



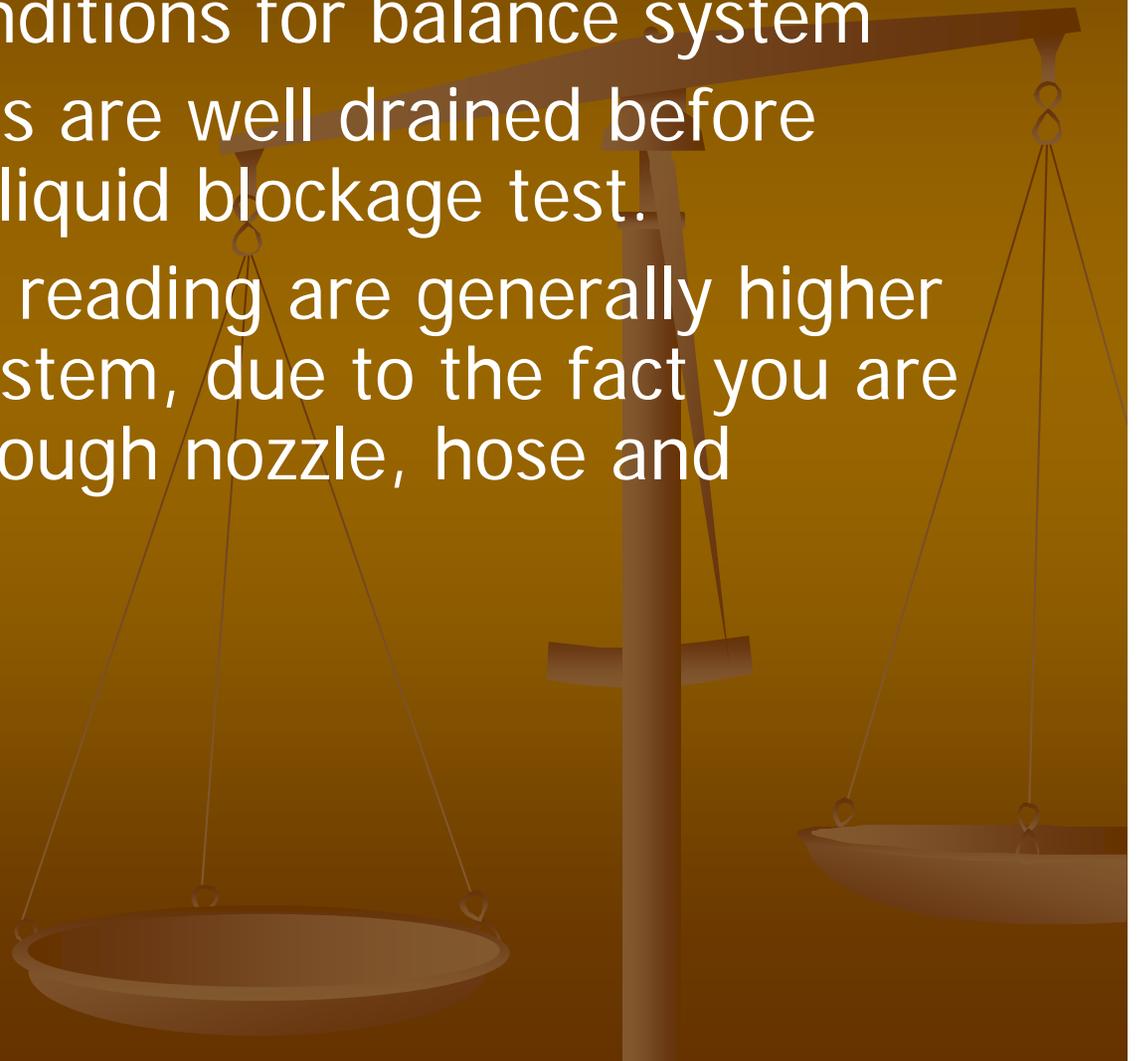
Test Procedures For Balance System

- All previously stated tests
- Flow rate test



Test Procedures For Balance System

- Unique testing conditions for balance system
 - Make sure hoses are well drained before conducting the liquid blockage test.
 - Liquid blockage reading are generally higher on a balance system, due to the fact you are pressurizing through nozzle, hose and dispenser.

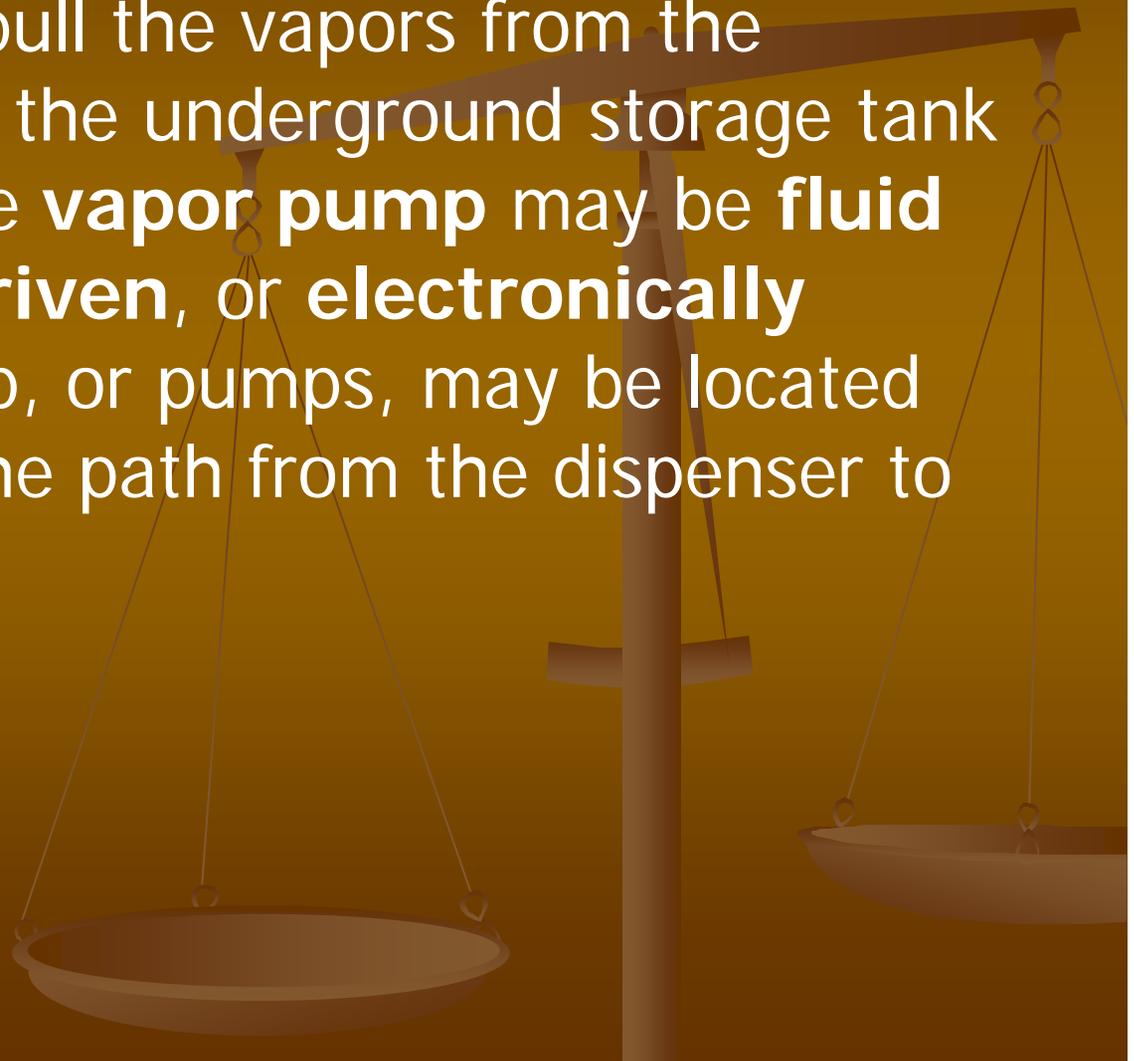


Vacuum Assist Systems

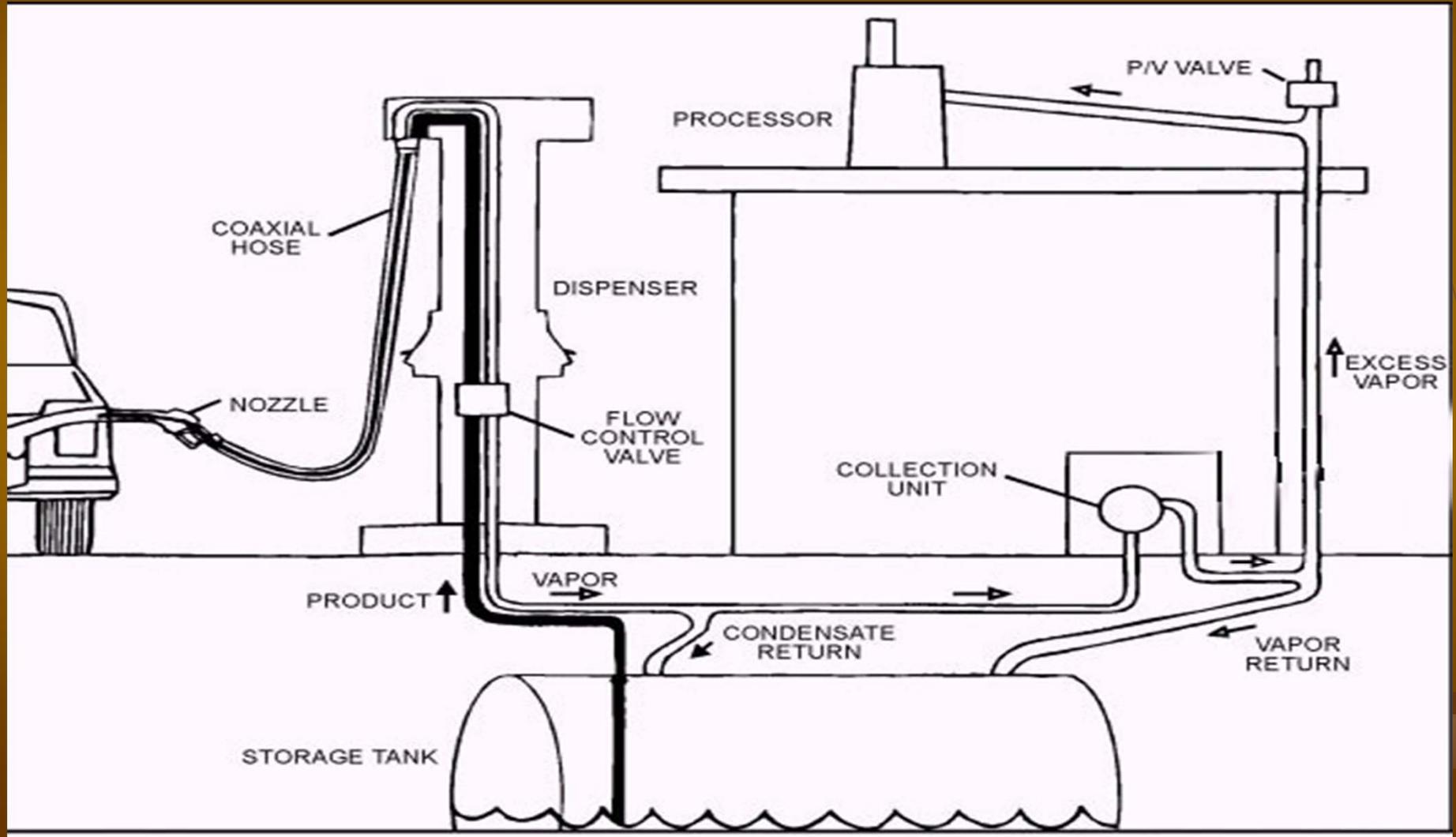


Vacuum Assist System

- **Assist systems** pull the vapors from the vehicle's tank into the underground storage tank using a pump. The **vapor pump** may be **fluid driven, motor driven, or electronically driven**. The pump, or pumps, may be located anywhere along the path from the dispenser to the tank.



Basic Operation of a Vacuum Assist System



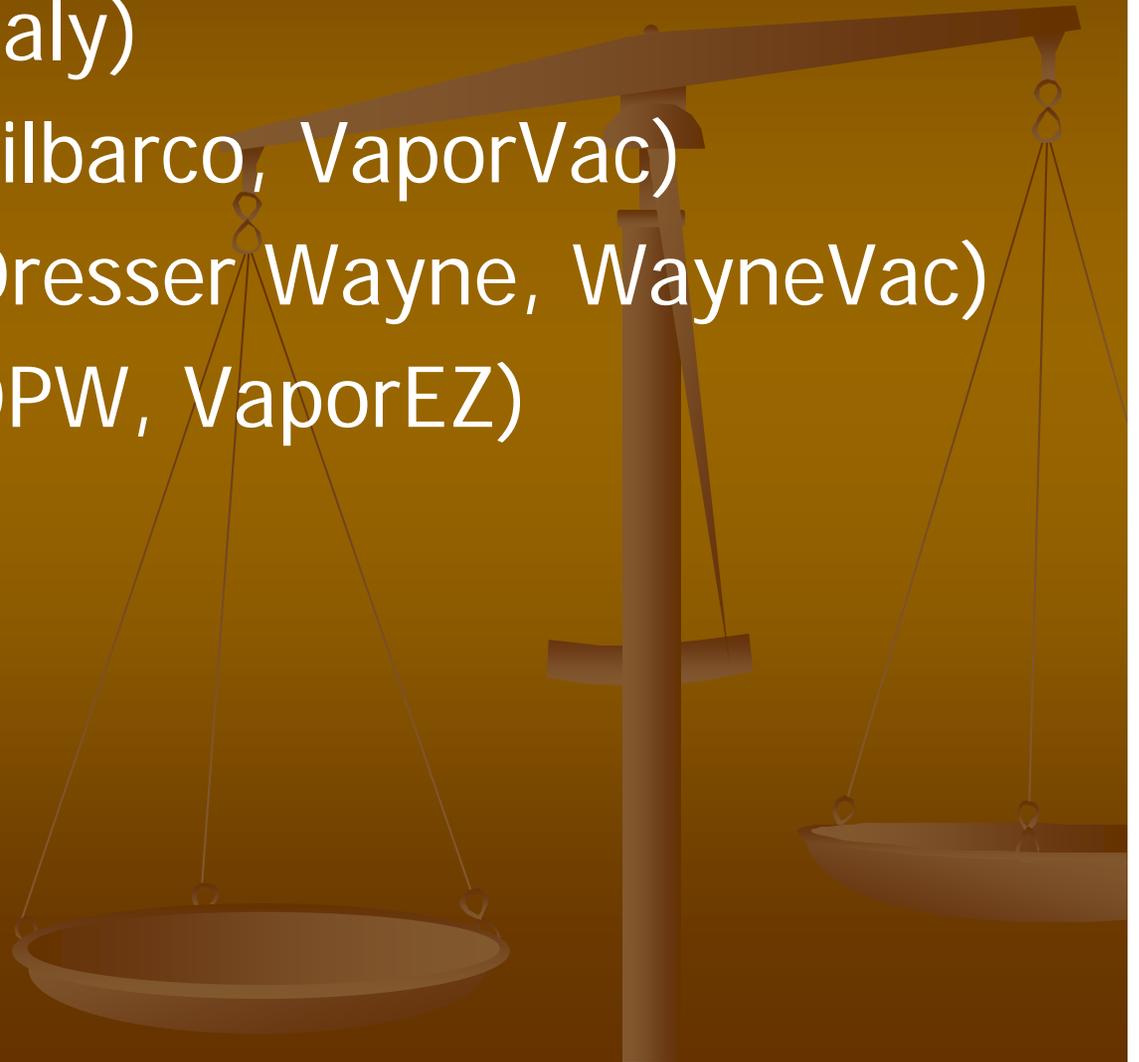
Basic Vacuum Assist System Component

- Components
 - Dispenser
 - Vacuum Pump
 - Hoses
 - Nozzle
 - PV / Valve



Examples of Applicable CARB Executive Orders for Vapor Assist Systems

- G-70-70-AC (Healy)
- G-70-150-AE (Gilbarco, VaporVac)
- G-70-153-AD (Dresser Wayne, WayneVac)
- G-70-163-AA (OPW, VaporEZ)



G-70-153-AD (Dresser Wayne, WayneVac)

■ Components

- Nozzle - OPW 12VW
- Hose – Goodyear Flexsteel
- Breakaway - Husky 5134
- Pressure / Vacuum Valves - OPW 523V
- Vapor Pump – Thomas Industry VR-0020/991110
- Dispenser – Vista Series Dispenser



Dispenser Component

- Examine all components for compliance with CARB Executive Orders



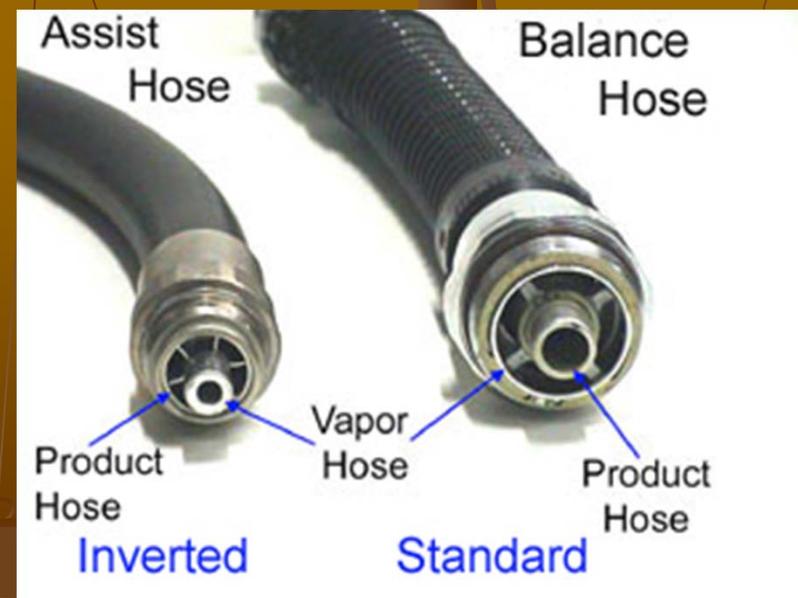
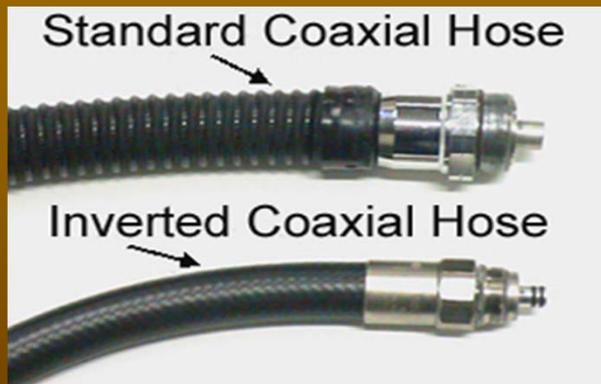
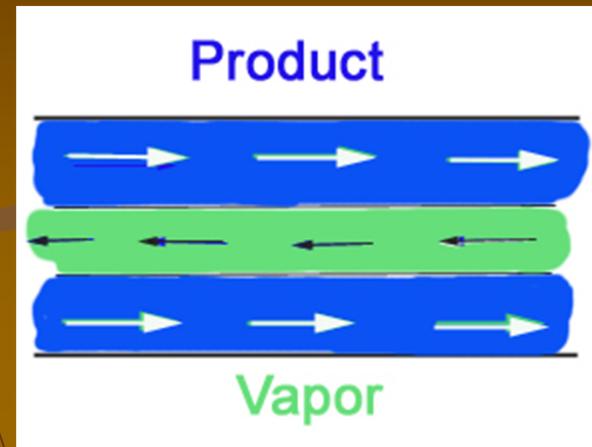
Identification of Dispenser Manufacturer

- Determine Dispenser type and ensure compliance with the CARB executive orders



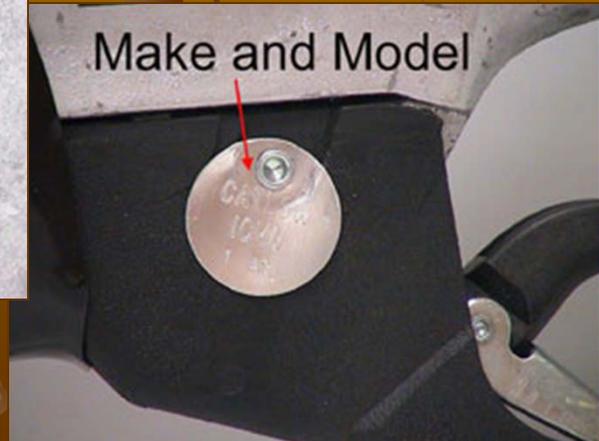
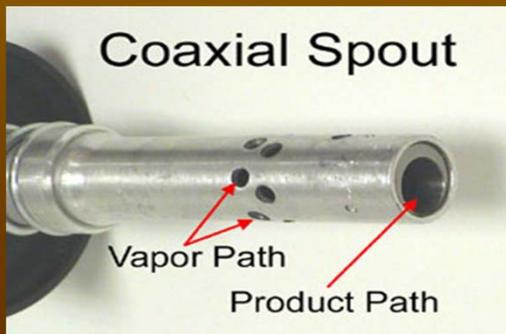
Vapor and Product Flow

- Assist System:
Product flow around
the vapor return
through the hose.



Nozzle Identification

- Make
- Model Number
 - Confirm nozzle make and model conform to CARB system requirements.



Breakaway

- What is it used for



Catlow



Healy



OPW66



Emco Wheaton



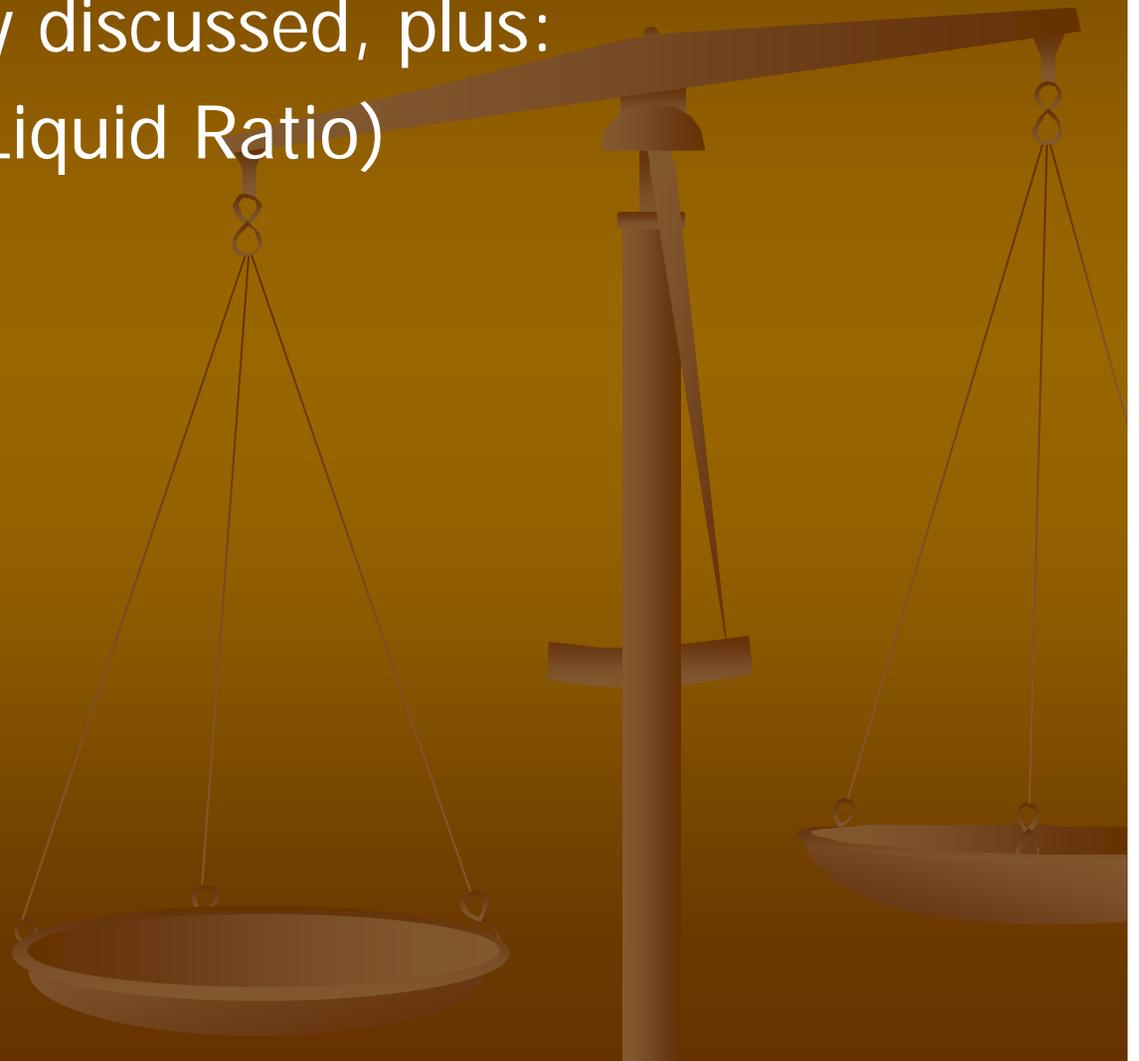
Husky

Testing Vapor Assist Systems



Test Procedures For Vapor Assist

- All tests previously discussed, plus:
- TP- 201.5 (Air to Liquid Ratio)

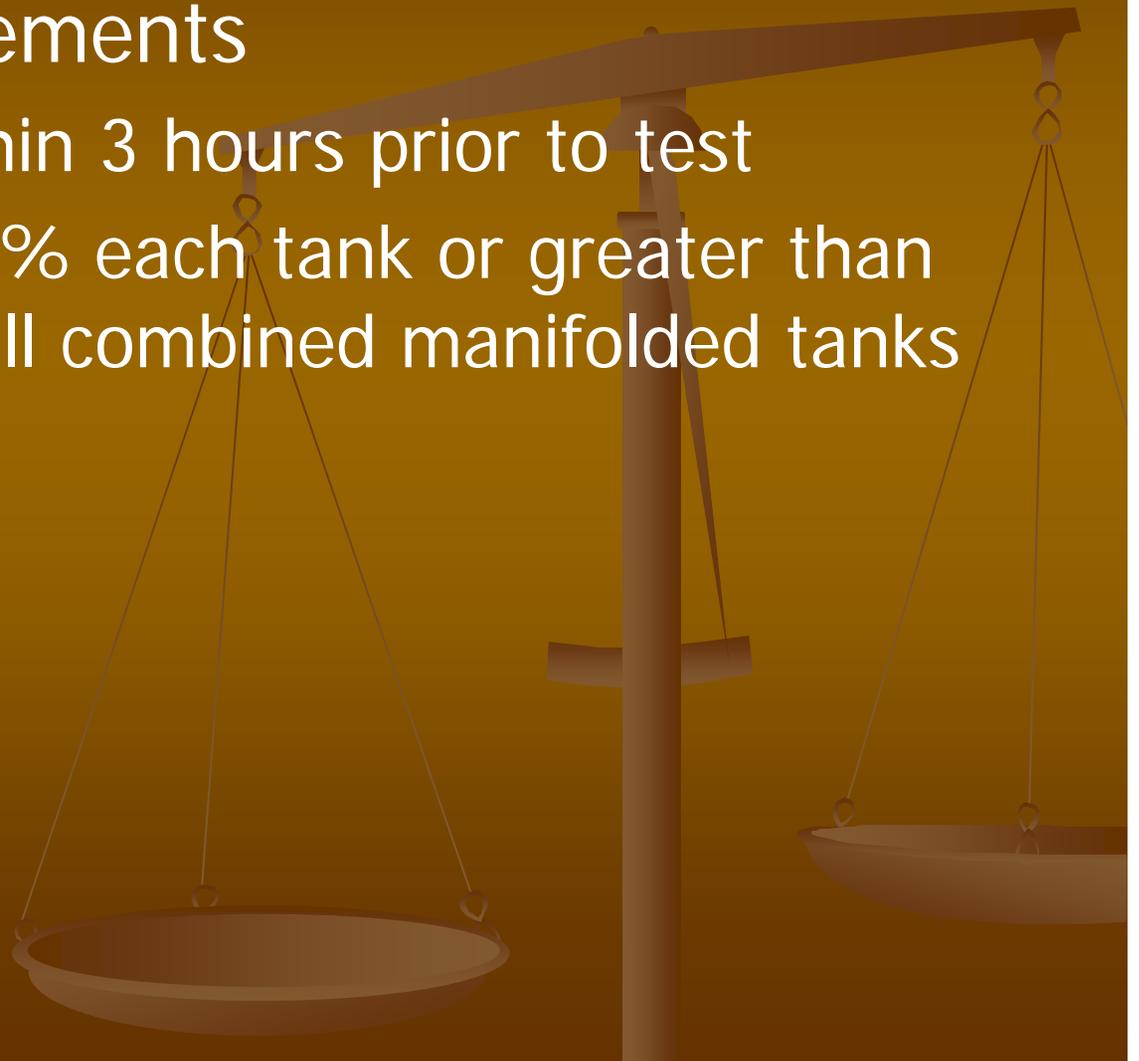


Special Requirements for Short Test

- The Following condition must be met to run the short test for Pressure Decay:
 - Average ambient temperature must be below 100 degrees F.
 - No less than 15% ullage per tank or no more 30,000 gallons total ullage including all manifolded tanks
 - No delivery within 8 hours prior to test.

Special Requirements for Long Test

- Testing Requirements
 - No delivery within 3 hours prior to test
 - No less than 10% each tank or greater than 60% ullage in all combined manifolded tanks



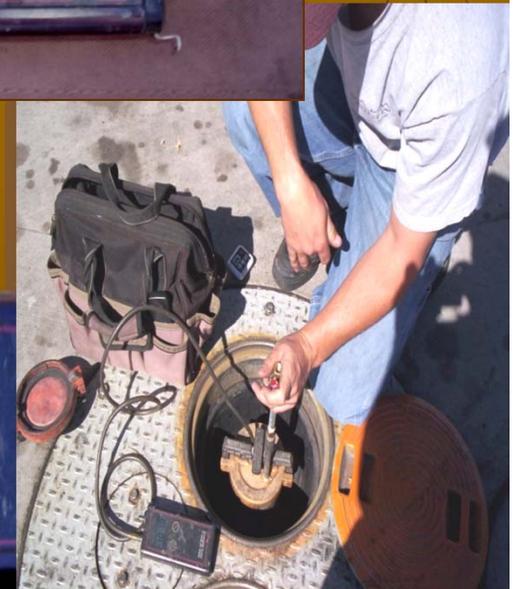
Pressure Decay Test

- Procedure

1. Pressure the system to 11 wci
2. Allow it to settle 15 min.
3. Reduce pressure to 10 wci and start the test.

- Acceptance Criteria

- For TP91-1 1wci
- For TP96-1 See chart.



Pressure Vent Valve

- Pressure Vent (PV) Cap
 - The PV Valve is used to regulate pressure in the storage tank.
 - Acceptance Criteria:
When using the OPW Leak Check, the valve must hold at 3 ± 0.5 pressure and at -8 to -10 wci of vacuum.



Liquid Blockage Test

- Procedure
 - Add 5 gallon down the furthest point on each island. (Note: on an Initial Test down each, and with a vapor pot 1 gal).
- Acceptance Criteria
 - 20 CFH allowable 0.15
 - 60 CFH allowable 0.45
 - 100 CFH allowable 0.95



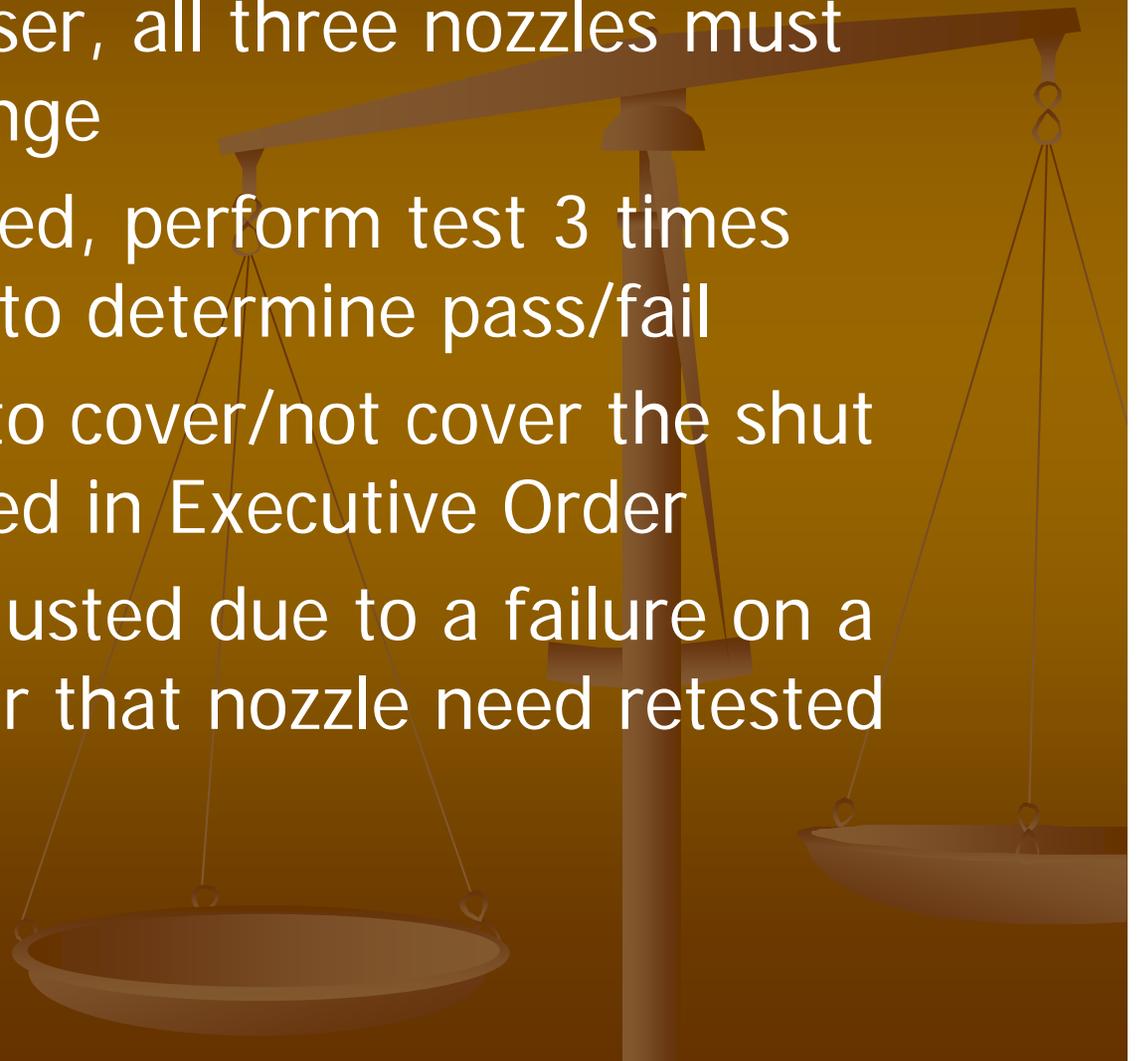
Communication

- Procedure:
 1. Introduce 100 CFH, 20 points higher than the highest reading on the blockage.
 2. Depress the dry break.
- Acceptance Criteria
 - Once you release the pressure at the dry break, there should be an immediate and significant drop on the gauge - At least 0.1 wci.



Air to Liquid Ratio Test

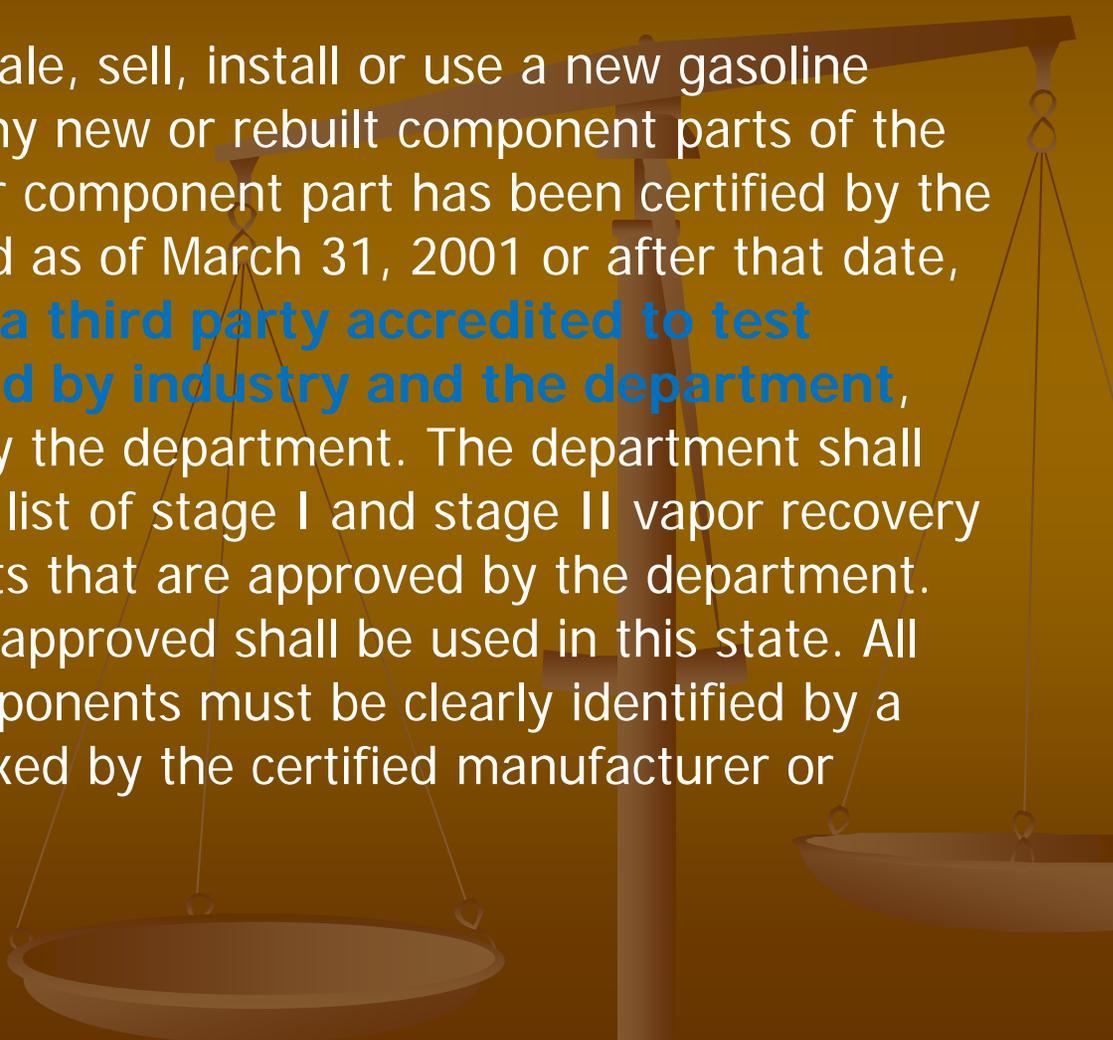
- If 3-nozzle dispenser, all three nozzles must have same A/L range
- If failure is observed, perform test 3 times and take average to determine pass/fail
- Test adaptor has to cover/not cover the shut off port as indicated in Executive Order
- If vac motor is adjusted due to a failure on a MPD, all grades for that nozzle need retested



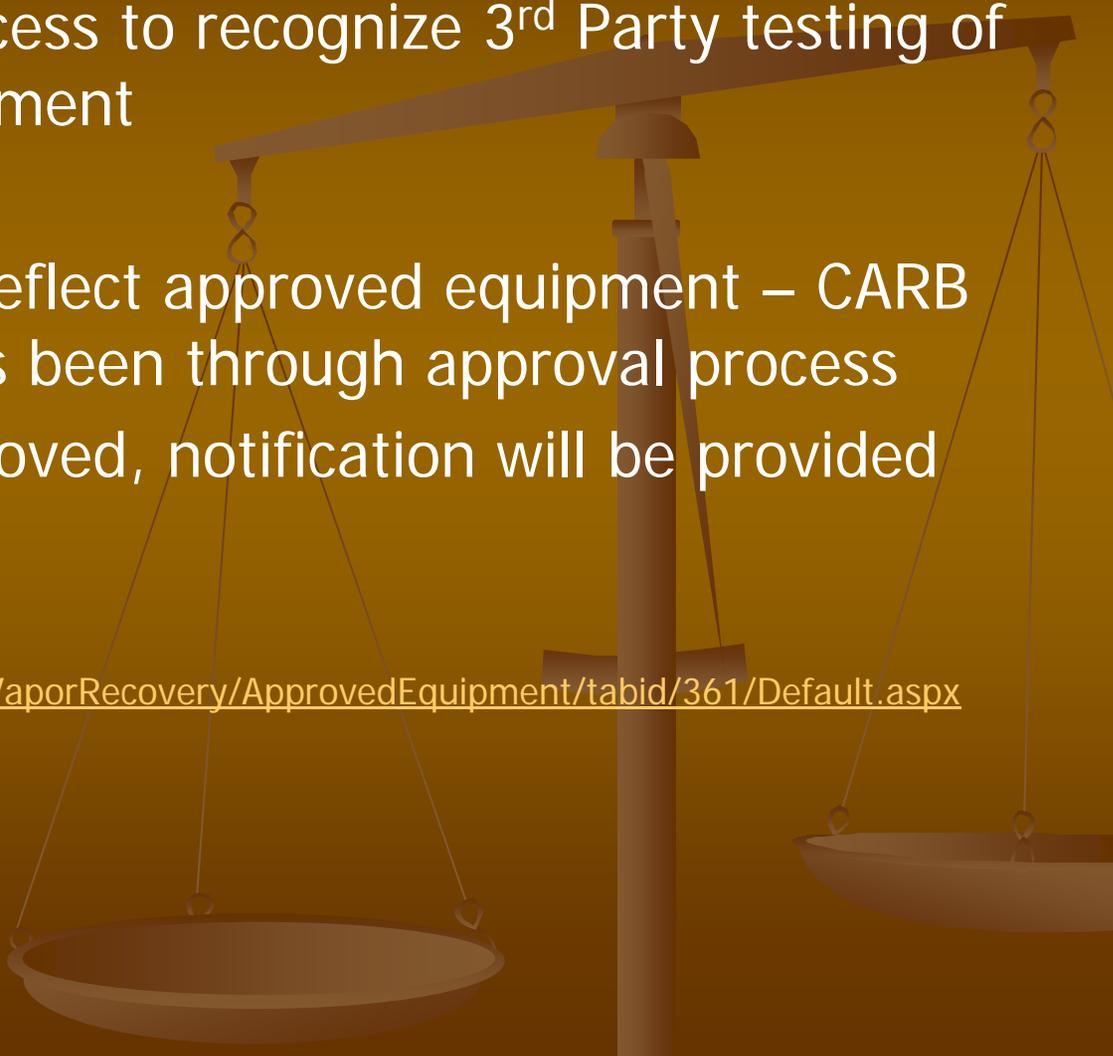
Statute for 3rd Party Testing

- § 41-2132. Stage I and stage II vapor recovery systems

A person shall not offer for sale, sell, install or use a new gasoline vapor recovery system, or any new or rebuilt component parts of the system, unless the system or component part has been certified by the California air resources board as of March 31, 2001 or after that date, **or has been approved by a third party accredited to test equipment and recognized by industry and the department,** and has not been rejected by the department. The department shall maintain and keep current a list of stage I and stage II vapor recovery systems and component parts that are approved by the department. Only those systems that are approved shall be used in this state. All certified vapor recovery components must be clearly identified by a permanent identification affixed by the certified manufacturer or rebuilder.



Approved Equipment



- New certification process to recognize 3rd Party testing of vapor recovery equipment
- Website updated to reflect approved equipment – CARB & equipment that has been through approval process
- As equipment is approved, notification will be provided to RSAs
- <http://www.azdwm.gov/BUSINESS/VaporRecovery/ApprovedEquipment/tabid/361/Default.aspx>

Questions ?



Written Test

- You will have 1 hour and 30 min. to complete the written test.
- The Test is open book only.
- If you do not pass, you can take the test one more time.
- If you fail to pass it a second time, you must wait 6 months before you can take the test again.

