

12-I Prevention of Accidental Ignition

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1.0 SCOPE

This chapter describes procedures for the prevention of accidental ignition of *gas*.

2.0 REGULATORY REFERENCES

49 CFR Part 192 § [192.751](#)

3.0 PROCEDURE [[192.751](#)]

- (a) DENC and DESC *shall* take steps to minimize the threat of accidental ignition in any structure or area where the presence of natural gas constitutes a hazard of fire or explosion.
- (b) In order to identify and designate a "safe zone" in which potential ignition sources need not be controlled, gas operations personnel will use a CGI, Sensit Gold, or other approved instrument designated for measuring percent gas and/or percent explosive mixture, when escaping gas is present in accordance with [Chapter 12-B Leak Response, Leak Classification, and Gas Emergencies, 3.2 Working in Natural Gas Atmospheres Involving Excavations](#). The atmosphere shall be continuously monitored with the appropriate instrument to detect changes in the "safe zone" perimeter.
- (c) Any time a hazardous amount of gas is being vented or purged into open air, each source of ignition *must* be removed from the area and a fire extinguisher must be provided.

Note: Pipelines that have been removed or isolated from their source of supply by valves, stop-off fittings, or squeeze points may still contain hazardous amounts of natural gas trapped within them, unless they are properly purged.

- (d) Personnel shall not smoke in areas where gas *may* collect or exist.

- (e) Welding or cutting *should not* be performed on a *pipeline* that contains a combustible mixture of gas and air. Most procedures will involve purging to eliminate a combustible mixture but when a pipeline is kept full of gas during welding or cutting operations, the following actions should be taken:
- (1) Control the gas pressure at the point of cutting and welding with a blow-off valve or other suitable means.
 - (2) Close all slots or open ends with tape or other suitable material immediately after they are cut. Use caution when working around open ends when gas is present.
 - (3) Do not permit two openings to remain uncovered at the same time. This is especially important if the two openings are at different elevations.
- (f) Pipelines Containing Air - Before the work is started, and at intervals as the work progresses, the atmosphere in the vicinity of the zone to be heated *should* be tested with a combustible gas indicator or by other suitable means.
- (1) No welding or cutting shall be done on a pipeline that contains air and is connected to a source of gas, unless a suitable means has been provided to prevent leakage of gas into the pipeline, i.e. bagging the line.
 - (2) Unless a suitable means (such as an air blower) is used to prevent a combustible mixture in the work area, welding, cutting, or other operations that could serve as a source of ignition should not be performed on a pipeline or auxiliary apparatus that contains air and is connected to a source of gas.
 - (3) When the means noted in (2) above are not used, one or both of the following precautions (depending upon circumstances at the job) are suggested:
 - (i) The pipe or other equipment upon which the welding or cutting is to be done should be purged with an inert gas.
 - (ii) The pipe or other equipment on which the welding, cutting or other work is to be performed should be continuously purged with air to ensure that a combustible mixture does not form in the pipeline or in the facility at the work area.
- (g) Bonding to provide electrical continuity should be used around cuts separating active steel pipelines. The bonded pipelines should also be grounded to provide electrical charges with a low resistant path to ground.
- (1) Use one ½" diameter ground rod, two stainless steel repair clamps (without rubber gasket), and two bonding cables of at least 1/0 extra flexible stranded copper conductor. The bonding cables should be approximately 15 feet long with two Anderson grounding clamps, or equivalent, installed on the ends.
 - (2) Install the ground rod in an area between each end of the pipe section that is to be separated. Install the stainless steel repair clamps on each side of the existing pipe ends left in place. Connect the bonding cables from the ground rods to each stainless steel repair clamp. This should put the remaining pipe, bonding cables, and ground rod all at the same potential.
 - (3) When removing the bonding/grounding devices, handle in the reverse order to that used during installation of the devices.
 - (4) Bonding and grounding measures should be installed prior to working on cut steel pipelines and maintained until all reconnections are completed
- (h) Steps should be taken to prevent static electric charges when gas is venting through plastic pipelines. Wet soapy rags should be placed over the pipeline and grounded to the surrounding wet earth. Broken or damaged plastic pipelines should be squeezed off in a separate bell hole in the safe zone. A CGI must be used to check all excavations prior to entry and to determine the "safe zone" in accordance with [Chapter 12-B Leak Response, Leak Classification, and Gas Emergencies, 3.2 Working in Natural Gas Atmospheres Involving Excavations](#).

- (i) Electrically powered tools, unless designated by the manufacturer as intrinsically safe ("explosion proof") for use in hazardous atmospheres, should not be used to repair, cut, tap, stop, squeeze-off, or disconnect pipelines that contain or may contain natural gas. This includes using electrical drills to make bar holes for conducting *leak* investigations; electric reciprocating saws for cutting non-purged piping; electric impact wrenches for breaking flanges; and similar electrical equipment applications.
- (j) If excavation equipment (i.e. trenchers, backhoes, etc.) must be moved in close proximity to a potentially flammable atmosphere, the engine should only be started and stopped within the "safe zone". Excavation equipment should only be used in a potentially flammable environment when there are no other practical alternatives and with approval from a supervisor. Under these conditions, the equipment operator must wear appropriate PPE
- (k) Verbal or visual methods, as appropriate, should be used to establish the safe zone, and limit access to the leak area.
- (l) When working around blowing gas or in a hazardous atmosphere, employees should remove all electronic devices that are not intrinsically safe.

4.0 TRAINING/QUALIFICATIONS

See the appropriate system Operator Qualification Program.

5.0 DOCUMENTATION/FORMS

System specific forms should be used where applicable.

6.0 RELATED DOCUMENTS

None at this time.

7.0 APPENDICES

None at this time.

(UNCONTROLLED IF PRINTED)