19.15.2.52 Hydrogen Sulfide Gas (Hydrogen Sulfide)

[wells, facilities, operations ...]

A. ~~In General. Hydrogen sulfide gas is a flammable, poisonous gas that may occur naturally as a component of crude petroleum and natural gas. The gas has a distinct and characteristic odor of rotten eggs but due to olfactory fatigue may not be sensed by the human sense of smell.~~

~~B.~~ Applicability. This section applies to any person, operator or facility subject to the jurisdiction of the Division, including, but not limited to, any person, operator or facility engaged in drilling, stimulating, injecting into, completing, working over or producing any oil, natural gas or carbon dioxide well or any person, operator, system or facility engaged in gathering, transporting, storing, processing or refining of crude oil, natural gas or carbon dioxide (hereinafter referred to collectively as "wells, facilities or operations" <or as <>>). This section shall not act to exempt or otherwise excuse surface waste management facilities permitted by the division pursuant to 19 NMAC 15.I.711 from more stringent conditions on the handling of hydrogen sulfide required of such facilities by 19 NMAC 15.I.711 or more stringent conditions existing in permits issued thereunder, nor shall such facilities be exempt or otherwise excused from the requirements set forth in this section by virtue of permitting under 19 NMAC 15.I.711.

B. ~~C.~~ Definitions (specific to this section).

1. ANSI. The acronym "ANSI" means the american national standards institute.
2. API. The acronym "API" means the american petroleum institute.
3. Area of Exposure. The phrase "area of exposure" means the area within a circle constructed with the point of escape at its center and the radius of exposure as its radius.
4. ASTM. The acronym "ASTM" means the american society for testing and materials.
5. Dispersion Technique. A "dispersion technique" is a mathematical representation of the physical and chemical transportation characteristics, dilution characteristics and transformation characteristics of hydrogen sulfide gas in the atmosphere.
6. Escape Rate. The "escape rate" is the maximum volume (Q) that is used to designate the possible rate of escape of a gaseous mixture containing hydrogen sulfide, as set forth herein.

a. For existing natural gas facilities or operations, the escape rate shall be ~~is~~ calculated using the maximum daily rate of the gaseous mixture produced or handled or the best estimate thereof. For an existing natural gas well, the escape rate shall be calculated by using the current daily absolute open flow rate against atmospheric pressure or the best estimate of that rate.

b. For new natural gas operations or facilities, the escape rate shall be calculated as the maximum anticipated flow rate through the system. For a new natural gas well, the escape rate shall be calculated using the maximum open-flow rate of offset wells in the pool, or the pool average of maximum open-flow rates.

c. For existing oil wells the escape rate shall be calculated by multiplying the producing gas/oil ratio by the maximum daily production rate or the best estimate thereof.

d. For new oil wells, the escape rate shall be calculated by multiplying the producing gas/oil ration by the maximum daily production rate of offset wells in the pool, or the pool average of the product of the producing gas/oil ration by the maximum daily production rate.

e. For facilities or operations not mentioned, the escape rate shall be calculated using the actual flow of the gaseous mixture through the operation or system.

7. GPA. The acronym "GPA" means the gas processors association.
8. LEPC. The acronym "LEPC" means the local emergency planning committee established pursuant to the emergency planning and community right-to-know act, 42 U.S. C. § 11001.
9. NACE. The acronym "NACE" refers to the national association of corrosion engineers.
10. PPM. The acronym "ppm" means "parts per million" by volume.
11. Potentially Hazardous Volume (hereinafter referred to as a "potentially hazardous volume") means the volume of hydrogen sulfide gas of such concentration that:

a. the 100-ppm radius of exposure includes any public area ~~as defined herein~~;

b. the 500-ppm radius of exposure includes any public road as defined herein; or

c. the 100-ppm radius of exposure exceeds ~~is equal to or in excess of~~ 3,000 feet.

12. Public Area. A "public area" is any building or structure that is not associated with the well, operation or system for which the radius of exposure is being calculated and that is used as a dwelling, office, place of business, church, school, hospital, or government building, or any portion of a park, city, town, village or designated school bus stop or other similar area where members of the public may reasonably be expected to be present.

13. Public Road. A "public road" is any federal, state, municipal or county road or highway or postal route.

14. Radius of Exposure. The radius of exposure ~~(hereinafter referred to as "radius of exposure" or "ROE")~~ is that radius constructed with the point of escape as its starting point and its length calculated using the following Pasquill-Gifford derived equation, or by such other method as may be approved by the division:

a. For determining the 100-ppm radius of exposure: $X= [(1.589)(\text{hydrogen sulfide concentration})(Q)]^{(0.6258)}$, where "X" is the radius of exposure in feet, the "hydrogen sulfide concentration" is the decimal equivalent of the mole or volume fraction of hydrogen sulfide in the gaseous mixture, and "Q" is the escape rate expressed in cubic feet per day (corrected for standard conditions of 14.73 psia and 60°F).

~~or~~

b. For determining the 500-ppm radius of exposure: $X=[(0.4546)(\text{hydrogen sulfide concentration})(Q)]^{(0.6258)}$, where "X" is the radius of exposure in feet, the "hydrogen sulfide concentration" is the decimal equivalent of the mole or volume fraction of hydrogen sulfide in the gaseous mixture, and "Q" is the escape rate expressed in cubic feet per day (corrected for standard conditions of 14.73 psia and 60°F).

c. For a well being drilled, completed, recompleted, worked over or serviced in an area where insufficient data exists to calculate a radius of exposure but where hydrogen sulfide could reasonably be expected to be present in concentrations in excess of 100 ppm in the gaseous mixture, a 100-ppm radius of exposure equal to 3,000 feet shall be assumed.

C. ~~D.~~ Required Testing and Calculation. ~~Determination of Hydrogen Sulfide Risk~~.

1. Testing ~~Determination of Hydrogen Sulfide Concentration~~.

a. Each well, facility or operation ~~person, operator or facility to which this section applies~~ shall determine the hydrogen sulfide concentration within each ~~of its~~ well, facility or operation ~~or systems~~. A representative sample or process knowledge may be used in lieu of individual testing of wells, operations or facilities ~~systems~~ provided that ~~the **person, operator or facility** can demonstrate that~~ the concentration derived from the representative sample or process knowledge is reasonably representative of the hydrogen sulfide concentration within the well, facility or operation ~~or facility system~~.

b. The tests used to make the determination referred to in the previous subparagraph shall be conducted in accordance with applicable ASTM or GPA standards or by other methods approved by the division.

c. If a representative sample from a well, facility or operation ~~or system~~ was tested prior to ~~within one (1) year of~~ the effective date of this section and otherwise meets the requirements of the previous subparagraphs, new testing shall not be required~~; provided, however, new testing shall not be required for a producing well that was tested at any time prior to the effective date of this section~~.

d. If any change or alteration may materially increase the concentration of hydrogen sulfide in a well, facility or operation, the operator must make a new determination of the hydrogen sulfide concentration in the well, facility or operation in accordance with this subsection.

2. ~~Tested~~ Concentrations Determined to be Below 100 ppm. If the concentration of hydrogen sulfide in a given well, facility or operation ~~or system~~ is less than 100 ppm, no further actions shall be required pursuant to this section.

3. ~~Tested~~ Concentrations Determined to be Above 100 ppm~~; Calculation of the Radius of Exposure~~.

a. If the concentration of hydrogen sulfide in a given well, facility or operation ~~or system~~ is determined to be 100 ppm or greater, then the person, facility or operation ~~or facility~~ must calculate the radius of exposure and comply with applicable requirements of ~~pursuant to~~ this section.

b. If calculation of the radius of exposure reveals that a potentially hazardous volume is present, the ~~person, operator or facility shall provide the~~ results of the determination of the hydrogen sulfide concentration and the calculation of the radius of exposure shall be provided to the division. For a well, facility or operation ~~or system~~ existing on the effective date of this section, the determination, calculation and submission required herein shall be accomplished within 180 days of the effective date of this section; for any well, facility or operation ~~or system~~ that commences operations after the effective date of this section, the determination, calculation and submission required herein shall be accomplished before operations begin.

4. Recalculation. The person, operator or facility shall calculate or recalculate the radius of exposure if ~~an operational change or production alteration causes~~ the hydrogen sulfide concentration in a well, facility or operation ~~or system to~~ increases to 100 ppm or greater or, if the hydrogen sulfide concentration in a well, facility or operation ~~or system~~ was already 100 ppm or greater, there is ~~causes~~ a 25% or greater increase in the actual volume fraction of hydrogen sulfide. If calculation or recalculation of the radius of exposure reveals that a potentially hazardous volume is present, ~~the person, operator or facility shall provide~~ the results shall be provided to the division within sixty ~~thirty~~ (60) days.

E. Hydrogen Sulfide Contingency Plan.

1. In General. A hydrogen sulfide contingency plan is a written document that provides a plan of action that will be used to alert and protect persons at risk in the event of a potentially significant release of hydrogen sulfide gas. The hydrogen sulfide contingency plan must be developed in accordance with the following paragraphs.

2. When Required. A hydrogen sulfide contingency plan must be prepared whenever a potentially hazardous volume of hydrogen sulfide is present or may reasonably be expected to be encountered.

3. ~~Input of Emergency Response Authorities and the Division. The person, operator or facility shall develop a proposed hydrogen sulfide contingency plan and provide a copy to the division, the New Mexico department of public safety (*i.e.*, the New Mexico state police), and the local emergency planning committee. If the potential source of release is within a municipality, a copy shall be provided to the municipal police and fire department. If the potential source of the release is outside the boundaries of a municipality, a copy shall instead be provided to the county sheriff and the county fire department or departments. Input on the proposed plan shall be sought from each of the foregoing; if an emergency response authority provided with a copy of the proposed plan fails to provide input or fails to respond at all, that fact shall be stated in the final hydrogen sulfide contingency plan submitted to the division. The input provided by the emergency response authorities shall be considered when preparing the final plan for submission to the division but failure to include any specific suggestion shall not affect the validity of the plan or cause disapproval of the plan by the division.~~

4. Plan Contents ~~Elements~~.

~~a. Elements Required for Each Plan:~~

~~i. A detailed description of each action to be taken in the event of a release of hydrogen sulfide requiring activation shall be included in each hydrogen sulfide contingency plan, including provisions for alerting and accounting for personnel, controlling any release of hydrogen sulfide gas, eliminating possible ignition sources, alerting the public (directly or through appropriate government agencies), evacuating persons in the affected area, using the call list to alert company officials and emergency response authorities, making recommendations to public officials to block access~~

~~to affected areas and conducting evacuations and coordinating emergency response with emergency response authorities.~~

a. API Guidelines. The hydrogen sulfide contingency plan shall be developed with due consideration of the guidelines ~~plan that addresses the items described~~ in paragraph 7.6 of the guidelines published by the API in its publication entitled "Recommended Practices for Oil and Gas Producing and Gas Processing Plant Operations Involving Hydrogen Sulfide," RP-55, most recent edition. ~~, shall be adequate for this purpose~~

b. Required Contents. The hydrogen sulfide contingency plan shall contain, but shall not be limited to, information on the following subjects, **as appropriate to the well, operation or system to which it applies [delete, weakens and provides loophole]**:

i. Emergency procedures. The hydrogen sulfide contingency plan shall contain information on emergency procedures to be taken in the event of a release, and shall include, at a minimum, information concerning the responsibilities of personnel during the emergency, an immediate action plan as described in the API document referenced in the previous subsubparagraph, telephone numbers of public agencies, emergency responders, local government and other appropriate public authorities. The hydrogen sulfide contingency plan shall also include the locations of nearby residences, businesses, parks, schools, churches, roads, medical facilities **etc.**

ii. Characteristics of hydrogen sulfide and sulfur dioxide. The hydrogen sulfide contingency plan shall include a discussion of the characteristics of hydrogen sulfide and hydrogen sulfide.

iii. Maps and drawings. The hydrogen sulfide contingency plan shall include maps and drawings that depict the radius of exposure, areas potentially affected thereby, public areas, public roads and any areas potentially affected by a release of a potentially hazardous volume.

iv. Trainings and Drills. The hydrogen sulfide contingency plan shall include a description of the responsibilities and duties of essential personnel, provide for periodic on-site or classroom drills or exercises that simulate a release, and shall describe how that training, and attendance at the training, will be documented. The hydrogen sulfide contingency plan shall also provide for training of residents on the proper protective measures to be taken in the event of a release, and shall include provisions for briefing public officials on issues such as evacuations or shelter-in-place plans.

Location and availabeility of necessary safety equipment and supplies.

v. Coordination with State Emergency Plans. The hydrogen sulfide contingency plan shall describe how emergency response actions proposed in the plan will be coordinated with the division and with the New Mexico state police consistent with the New Mexico hazardous materials emergency response plan (HMER).

vi. Activation Levels. The hydrogen sulfide contingency plan shall include the activation threshold and a description of events that could lead to such a release.

Plans Required by Other Jurisdictions. A plan required byu the Bureau of Land Managemnet or other jurisdiction that meets the requiremsnt of this subsection may be submitted to the division in satisfacytion of this subsection.

~~ii. A call list including the following as applicable:~~

~~aa. local supervisory personnel;~~

~~bb. county sheriff;~~

~~cc. department of public safety and state police;~~

~~dd. city or municipal police;~~

~~ee. appropriate division district office; and~~

~~ff. other public agencies as appropriate;~~

~~iii. A plat or map detailing the area within the radius of exposure of a potentially hazardous volume; and~~

~~iv. A list of the names and telephone numbers of all personnel to be contacted when a release is reported or suspected.~~

~~b. Where the 500-ppm radius of exposure encompasses any public road, the person, operator or facility shall include the following additional elements in the hydrogen sulfide contingency plan:~~

~~i. A plat or map detailing the area of exposure, including the locations of public roads; and~~

~~ii. A plan to divert traffic and safely get existing traffic off the road and out of danger.~~

~~c. Where the 100-ppm radius of exposure encompasses any public area, the following additional elements shall be included in the hydrogen sulfide contingency plan:~~

~~i. A call list including all the persons set forth in Sub subparagraph E(4)(a)(ii), above, and the following:~~

~~aa. ambulance services;~~

~~bb. hospitals;~~

~~cc. county and city fire departments;~~

~~dd. doctors;~~

~~ee. contractors for supplemental or emergency equipment; and~~

~~ff. other public agencies as appropriate;~~

~~ii. A statement describing how emergency response actions will be coordinated with the division and the New Mexico state police, consistent with the New Mexico hazardous materials emergency response plan (HMER);~~

~~iii. A plat or map detailing the area of exposure, including the locations of public areas and public roads;~~

~~iv. The names and telephone numbers of all persons living within the area of exposure and contact persons for areas of public concentration such as churches, schools, hospitals, offices and places of business;~~

~~v. Provision for advance briefing of affected persons within the radius of exposure. Such advance briefing shall include the hazards and characteristics of hydrogen sulfide, the necessity for a hydrogen sulfide contingency plan, the possible sources of hydrogen sulfide within the radius of exposure, instructions for reporting a gas leak, the manner in which persons will be notified in the event of an emergency and steps to be taken in an emergency;~~

~~vi. In lieu of the provision for advance briefing of persons within the radius of exposure described in the previous subsubparagraph, a reaction-type plan may be prepared and submitted that provides for mass notification of a release of hydrogen sulfide and for evacuation of affected areas; and~~

~~vii. Additional support information, if applicable, such as the location of emergency evacuation routes, the location of safety and life support equipment, the location of facilities containing hydrogen sulfide, the location of nearby telephones or other means of communication and special instructions for conditions at a particular installation such as local terrain and the effect of various weather conditions.~~

~~d. Additional Requirements. The division may impose additional requirements or modify requirements based on site-specific conditions, population density or special circumstances~~.

5. Submission.

a. Where Submitted. The hydrogen sulfide contingency plan shall be submitted to the division ~~and a copy shall be submitted to the local emergency planning committee, if one exists~~.

b. When Submited. A hydrogen sulfide contingency plan for a well, facility or ~~system or~~ operation existing on the effective date of this section shall be submitted within 180 days from the effective date of this section. A hydrogen sulfide contingency plan for a new well, system or operation shall be submitted before operations commence. A hydrogen sulfide contingency plan shall be

submitted within 180 days after the person, operator or facility becomes aware or should have become aware that if a public area or public road is established that creates a potentially hazardous volume where none previously existed. The hydrogen sulfide contingency plan for a drilling, completion, workover or well servicing operation must be on file with the division before operations commence and may be submitted separately or along with the application for permit to drill (APD) or may be on file from a previous submission.

c. Annual Inventory of Contingency Plans. On an annual basis, each person, operator or facility required to prepare one or more hydrogen sulfide contingency plans pursuant to this section shall file with the appropriate local emergency planning committee and the state emergency response commission an inventory of the wells, facilities or operations for which plans are on file with the division and the name, address and telephone number of a point of contact.

d. Electronic Submission. The hydrogen sulfide contingency plan shall be submitted electronically in a generally accepted format that is compatible with the division's systems.

6. Failure to Submit Plan. Failure to submit a hydrogen sulfide contingency plan when required may result in denial of an application for permit to drill ~~that well~~, cancellation of an allowable for the subject well or other appropriate enforcement action.

7. ~~Annual~~ Review, Amendment. The person, operator or facility shall review the hydrogen sulfide contingency plan any time a subject addressed in the plan changes and make appropriate amendments. ~~on an annual basis, or more frequently if activation of a plan reveals a deficiency or, if changes to processes, concentrations of hydrogen sulfide or other circumstances occur, or if a new public area and/or a new public road is established that creates a potentially hazardous volume. The person, operator or facility shall submit any amendments to the division and to the local emergency planning committee. Reasonable efforts shall be taken to update on an annual basis the lists of names and telephone numbers in the hydrogen sulfide contingency plan.~~ If the division determines that a hydrogen sulfide contingency plan is inadequate ti protect public safety, the division may require the person, operator or facility to add provisions to the plan or amend the plan as necessary to protect public safety.

8. Retention and Inspection. The hydrogen sulfide contingency plan shall be reasonably accessible in the event of a release, ~~and~~ maintained on file at all times, and ~~shall be~~ available for inspection by the division.

9. Plan Activation. The hydrogen sulfide contingency plan shall be activated in the event of a release that may create a concentration of hydrogen sulfide of 100 ppm in any public area, 500 ppm at any public road or 100 ppm 3,000 feet from the site of release.

F. Signage. Each well, facility or operation containing a concentration of hydrogen sulfide of 100 ppm or greater shall provide and maintain signage. The sign or marker shall conform with the current ANSI standard Z53.1 and shall provide other information sufficient to warn the public that a potential danger exists. Signs markers shall be prominently posted at locations like entrance points and road crossings, and shall be sufficient to alert the public that a potential danger exists.

~~Signage at Wells, Facilities or Operations. For every well, operation or system to which this section applies that contains a concentration of hydrogen sulfide of 100 ppm or greater, the person, operator or facility must provide signage as set forth herein.~~

~~1. Drilling, Completion, Workover, and Well Servicing Operations. A danger or caution sign shall be displayed at each drilling, completion, workover and well servicing operation along each point of access to the site. The signs shall read "DANGER - POISON GAS, HYDROGEN SULFIDE PRESENT" or, as appropriate, "CAUTION - POISON GAS - HYDROGEN SULFIDE MAY BE PRESENT" or use equivalent language approved by the division, and shall state in smaller lettering: "Do Not Approach If Red Flag is Flying" or use equivalent language approved by the division. Each sign shall be painted in colors that satisfy Table 1 of ANSI standard Z53.1-1967 or regulations of the federal occupational safety and health administration, or in another color approved by the division. The signs shall be legible and large enough to be read by all persons entering the well site and shall be placed a minimum of 200 feet but no more than 500 feet from the well site and at a location that allows vehicles to turn around at a safe distance prior to reaching the site.~~

~~2. Crude Oil Pump Stations, Producing Wells, Tank Batteries and Associated Production Facilities, Refineries, Gas Plants and Compressor Stations. A danger sign or signs shall be posted within 50 feet of each crude oil pump station, producing well, tank battery and associated production facility, refinery, gas plant and compressor station to alert the public of the potential hydrogen sulfide danger. If fenced, a danger sign at the gates shall suffice. The signs shall read "DANGER - POISON GAS - HYDROGEN SULFIDE PRESENT," or, as appropriate, "CAUTION - POISON GAS - HYDROGEN SULFIDE MAY BE PRESENT" or use equivalent language approved by the division. Each sign shall be painted in colors that satisfy Table 1 of ANSI standard Z53.1-1967 or regulations of the federal occupational safety and health administration, or in another color approved by the division. The signs shall be legible and large enough to be read by all persons entering the site. A sign shall be placed at each point where a flow line or gathering line crosses a public road; each sign shall be legible and shall contain the name of the owner or operator and an emergency telephone number.~~

~~3. Tanks or Vessels. A danger sign or signs shall be posted on or within 50 feet of any storage tank to alert persons of the potential hydrogen sulfide danger. For any storage tank for which fencing is required, a danger sign posted at the locked gates shall suffice. The signs shall read "DANGER - POISON GAS - HYDROGEN SULFIDE PRESENT," or, as appropriate "CAUTION - POISON GAS - HYDROGEN SULFIDE MAY BE PRESENT," or equivalent language approved by the division. Each sign shall be painted in colors that satisfy Table 1 of ANSI standard Z53.1-1967 or regulations of the federal occupational safety and health administration or another color approved by the division. The sign(s) shall be legible and large enough to be read by all persons entering the site.~~

G. Protection from Hydrogen Sulfide During Drilling, Completion, Workover, and Well Servicing Operations.

1. API Standards. All drilling, completion, workover and well servicing operations ~~where it is reasonably expected that a potentially hazardous volume of hydrogen sulfide will be encountered~~ shall be conducted with due consideration to the guidelines published by the API entitled "Recommended Practice for Oil and Gas Well Servicing and Workover Operations Involving Hydrogen Sulfide," RP-68, and "Recommended Practices for Drilling and Well Servicing Operations Involving ~~of~~ Wells Containing Hydrogen Sulfide," RP-49, most recent editions.

~~2. Minimum Standards. At a minimum, each drilling, completion, workover and well servicing operation where a potentially hazardous volume of hydrogen sulfide may reasonably be expected to be encountered shall be conducted in accordance with the following:~~

~~a. Before Commencing Operations. Hydrogen sulfide training shall be completed and warning systems shall be operational before commencement of operations. Detection and monitoring equipment is not required for drilling from the surface to within 500 feet of the zone anticipated to contain hydrogen sulfide.~~

~~b. Egress Routes. The person, operator or facility shall maintain passable egress routes at all times during operations.~~

2. Detection and Monitoring Equipment. The person, operator or facility shall provide hydrogen sulfide detection and monitoring equipment as follows:

a. Each drilling and completion site shall have an accurate and precise hydrogen sulfide detection and monitoring system that will automatically activate visible and audible alarms when the ambient air concentration of hydrogen sulfide reaches a predetermined value set by the operator, not to exceed 20 ppm. There shall be a sensing point located at the shale shaker, rig floor and bell nipple for a drilling site and the cellar, rig floor and circulating tanks or shale shaker for a completion site.

~~ii. The detection system shall be calibrated and tested and the results recorded monthly. Each test of the hydrogen sulfide monitoring system shall be recorded on the driller's log or its equivalent.~~

b. For workover and well servicing operations, one operational sensing point shall be located as close to the well bore as practical. Additional sensing points may be necessary for large or long-term operations.

c. Hydrogen sulfide detection and monitoring equipment must be provided and must be made operational during drilling when drilling is within 500 feet of a zone anticipated to contain hydrogen sulfide and continuously thereafter through all subsequent drilling.

3. Wind Indicators.

a. Equipment to indicate wind direction shall be present and visible at all times. At least two devices to indicate wind direction shall be installed at separate elevations and visible from all principal working areas at all times.

b. When a sustained concentration of hydrogen sulfide is detected in excess of 20 ppm at any detection point, red flags shall be displayed.

4. Flare System. For drilling and completion operations in an area where it is reasonably expected that a potentially hazardous volume of hydrogen sulfide will be encountered, the person, operator or facility shall install a flare system to safely gather and burn hydrogen sulfide-bearing gas. Flare outlets shall be located at least 150 feet from the well bore. Flare lines shall be as straight as practical. The flare system shall be equipped with a suitable and safe means of ignition. Where noncombustible gas is to be flared, the system shall be provided supplemental fuel to maintain ignition.

5. ~~Use of~~ Well Control Equipment. When the 100 ppm radius of exposure includes a public area, the following additional measures shall be required:

a. Drilling. A remote controlled well control system ~~choke and accumulator~~ shall be installed and operational at all times beginning when drilling is within 500 feet of the formation believed to contain hydrogen sulfide and continuously thereafter during drilling. The well control system ~~remote controlled choke~~ must include, at a minimum, a pressure and hydrogen sulfide-rated well control choke and kill system including manifold and blowout preventer that meets or exceeds the specifications API-16C and API-RP 53 or other specifications approved by the division. ~~The blowout preventer stack shall have at least one spool for the kill and choke lines, two pipe rams, one blind ram, one annular device and a rotating head.~~ Mud-gas separators shall ~~also~~ be used. These systems shall be tested and maintained pursuant to the specifications referenced, according to the requirements of this part, or otherwise as approved by the division.

b. Completion, Workover and Well Servicing. A remote controlled pressure and hydrogen sulfide rated well control system that meets or exceeds API specifications or other specifications approved by the division shall be installed and operationsla at all times during completion, workover and servicing of a well. ~~If feasible, the equipment described in the previous subsubparagraph shall be installed and operational at all times during completion, workover and well servicing of a well. If not feasible, a suitable alternative to a remote choke such as a remote controlled valve or blow out preventer with remote accumulator may be used, so long as the alternative equipment will be protective of public safety.~~

6. Mud Program. A mud program, including de-gassing and flaring, capable of handling hydrogen sulfide conditions and well control shall be used.

7. Well Testing. Except with prior approval of ~~by~~ the division, drill-stem testing of a zone that contains hydrogen sulfide shall be conducted only during daylight hours and ~~closed chamber only, in that~~ formation fluids shall not be permitted to flow to the surface (closed chamber only).

8. If Hydrogen Sulfide Encountered During Operations.

~~a.~~ If hydrogen sulfide was not anticipated at the time the division issued a permit to drill but is encountered during drilling in a concentration of 100 ppm or greater in the gaseous mixture, the operator must satoisfy the requirements of this section before continuing drilling operations. ~~shall immediately ensure control of the well, suspend drilling operations unless detrimental to well control, take whatever measures are necessary under the circumstances to assure public safety, calculate the radius of exposure and, if a potentially hazardous volume is present, prepare a hydrogen sulfide contingency plan and obtain materials and equipment to bring operations into compliance with this section.~~ The operator shall notify the division of the event and the mitigating steps that have or are being taken as soon as possible, but no later than 24 hours following discovery. The division may grant verbal approval to continue drilling operations pending preparation of any required hydrogen sulfide contingency plan.

~~b. If Hydrogen Sulfide Is Encountered During Use of Air, Gas, Mist or Other Non-Mud Circulating Media. If hydrogen sulfide gas in excess of 100 ppm is encountered while drilling with air, gas, mist or other non-mud circulating mediums, the well shall be killed with a water- or oil-based mud, and mud shall be used thereafter as the circulating medium for continued drilling. An alternate drilling method may be used if specifically approved by the division.~~

H. Protection from Hydrogen Sulfide at Crude Oil Pump Stations, Producing Wells, Tank Batteries and Associated Production Facilities, Pipelines, Refineries, Gas Plants and Compressor Stations.

1. API Standards. Operations at crude oil pump stations and producing wells, tank batteries and associated production facilities, refineries, gas plants and compressor stations ~~containing a potentially hazardous volume of hydrogen sulfide~~ shall be conducted with due consideration to the guidelines published by the API in its publication entitled "Recommended Practices for Oil and Gas Producing and Gas Processing Plant Operations Involving Hydrogen Sulfide," RP-55, latest edition.

~~2. Minimum Standards. At a minimum, operations at crude oil pump stations and producing wells, tank batteries and associated production facilities, refineries, gas plants and compressor stations containing a potentially hazardous volume of hydrogen sulfide shall also be conducted in accordance with the following subparagraphs and subsubparagraphs.~~

2. Security ~~Fencing~~. Well sites and other unattended, fixed surface facilities shall be protected from public access by fencing with locking gates when the location is within 1/4 mile of a public area. A surface pipeline shall not be considered a fixed surface facility for purposes of this paragraph. ~~Fencing and gates shall be required when crude oil pump stations and producing wells, tank batteries and associated production facilities are located in a public area or within a 1/4 mile of a building or structure used as a dwelling, office, place of business, church, school, hospital or government building or within 1/4 mile of a park, playground or school bus stop. The fence shall consist of a 5-foot chain link topped by two stands of barbed wire or other design approved by the division. Gates shall be locked when unattended.~~

3. Wind Direction Indicators. Equipment to indicate wind direction shall be installed and visible from all principal working areas at all times. ~~Wind direction indicators shall be required.~~

4. ~~Secondary~~ Well Control Equipment. Any well shall possess a secondary means of immediate well control through the use of appropriate christmas tree or downhole completion equipment. Such equipment shall allow downhole accessibility (reentry) under pressure for permanent well control ~~operations~~.

d. Special Requirements. In addition, safety devices such as automtic shut-down devices shall be installed and maintained in good operta9ing vcondition. Alternatively, safety procedures shall be established designed to prevent the undetected release of hydrogen sulfide. Any well shall possess a secondary means of immediate well control through the use of an appropriate christas tree or downhole completion equipment. Such equipment shall permit the downhole accessibility (re-entry) under pressure for immediate well control.

~~d. Automatic Safety Valve or Shutdown. Any well shall possess an automatic safety valve or shutdown at the facility or wellhead or other appropriate shut-in control. The automatic safety valve shall be set to activate upon a release of a volume of hydrogen sulfide that may create a concentration of hydrogen sulfide of 100 ppm in any public area, 500 ppm at any public road or 100 ppm 3,000 feet from the site of release.~~

3. Tanks or vessels. Each stair or ladder leading to the top of any tank or vessel containing 300 ppm or more of hydrogen sulfide in the gaseous mixture shall be chained or marked to restrict entry. ~~Any tank or tank battery that requires fencing pursuant to this section may substitute a danger sign posted at the gates for chaining and signs.~~

4. Compliance Schedule. Each existing crude oil pump station and producing well, tank battery and associated production facility, pipeline, refinery, gas plant and compressor station not currently meeting the requirements of this subsection ~~and minimum standards set forth herein~~ shall be brought into compliance within one year of the effective date of this section. ~~Each crude oil pump station~~

~~and producing well, tank battery and associated production facility constructed following the effective date of this section shall be designed, constructed and operated to meet the requirements set forth herein.~~

I. Personnel Protection and Training. All persons responsible for the implementation of any hydrogen sulfide contingency plan shall be provided training in hydrogen sulfide hazards, detection, personal protection and contingency procedures.

J. Standards for Equipment That May Be Exposed to Hydrogen Sulfide. Whenever a potential hazardous volume of hydrogen sulfide is present or may reasonably be expected to be encountered, persons, operators and facilities shall select ~~choose~~ equipment with consideration for both the hydrogen sulfide working environment and anticipated stresses and use NACE Standard MR0175 (latest edition) or some other standard approved by the division ~~shall be used~~ for selection of metallic equipment or, if applicable, provide adequate protection by chemical inhibition or other methods that control or limit the corrosive effects of hydrogen sulfide ~~shall be used~~.

K. Exemptions. Any person, operator or facility may petition the director, or the director's designee, for an exemption to any requirements of this section. Any such petition shall provide specific information as to the circumstances that warrant approval of the exemption requested and how the public safety will be protected. ~~A safety plan required by other governmental agencies may accompany the petition for exemption.~~ The director, or the director's deisgnee, after considering all relevant factors, may approve an exemption if the circumstances warrant an exemption.

~~L. Release. Upon a release of hydrogen sulfide the following actions must be taken:~~

~~1. Activation of the Hydrogen Sulfide Contingency Plan. The hydrogen sulfide contingency plan shall be activated in the event of a release that may create a concentration of hydrogen sulfide of 100 ppm in any public area, 500 ppm at any public road or 100 ppm 3,000 feet from the site of release.~~ **[moved to contingency plans]**

~~2.~~ Notification of the Division. The person, operator or facility shall notify the division upon a release of hydrogen sulfide requiring activation of the hydrogen sulfide contingency plan, ~~preferably within one hour of discovery of the release, but~~ as soon as possible , but no more than four hours after plan activation, recognizing that a ~~in cases where~~ prompt response should supercede notification. The person, operator or facility shall submit a full report of the incident to the division on Form C-141 no later than fifteen (15) days following the release.

~~M. Electronic Submission. Any submission to the division required by this section shall be made electronically in a generally accepted format that is compatible with the division's systems~~. [moved to contogenyc plan section]

N. Corrective Actions. The division may require corrective actions if necessary to maintain control of a well or any other facility or to safeguard public safety. [RE<MINDER OF DIVISION'S STATUTORY AUHTHORITY]