19.15.2.52 Hydrogen Sulfide Gas (Hydrogen Sulfide)

~~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~~A. Applicability. This section is a public safety ~~standard~~ rule that 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 or facility engaged in gathering, transporting, storing, processing or refining of crude oil, natural gas or carbon dioxide. 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.

~~C~~B. 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. ~~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.
   a) For existing gas operations and facilities, t~~T~~he escape rate is calculated using the maximum daily rate of the gaseous mixture produced, 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 gas operations and facilities, the escape rate will 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 off set wells, or the field average of current maximum open-flow rates.
   c) For ~~an~~ existing oil wells and facilities, 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 a new oil well, the escape rate shall be determined by multiplying the producing gas/oil ratio by the maximum daily production rate of offset wells or the field average of current wells. ~~For an oil or natural gas well drilled in a developed area, the escape rate may be determined by using data from offset wells completed in the interval in question, or using some other reasonable means to calculate the escape rate. For facilities or operations not mentioned, the escape rate shall be calculated using the actual flow of the gaseous mixture through the facility or operation.~~
   e) For facilities or operations not mentioned, the escape rate shall be calculated using the actual flow, or a reasonable estimate thereof, of the gaseous mixture through the facility or operation.
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"~~PHV) 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 is ~~equal to or~~ in excess of 3,000 feet.

12. Public Area. A "public area" is any occupied 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, ~~school bus stop,~~ hospital, or government building, or any portion of a park, city, town, village or ~~or~~ an ~~school bus stop or~~ established 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.

~~D~~C. ~~Determination of Hydrogen Sulfide Risk~~Testing for Presence of Hydrogen Sulfide.

1. Determination of Hydrogen Sulfide Concentration.

a. Each person, operator or facility to which this section applies shall determine the hydrogen sulfide concentration within each of its ~~wells,~~ operations or systems. A representative sample or process knowledge may be used in lieu of individual testing of wells~~wells,~~ operations or 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~~well,~~ operation or 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 valid, representative sample from an ~~well,~~ operation or system was tested at any time prior to the effective date of this section, ~~within one (1) year of the effective date of this~~

~~section,~~ 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~~.

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

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

~~a.~~ If the concentration of hydrogen sulfide in a given ~~well,~~ operation or system is 100 ppm or greater, then the person, operator or facility must calculate the radius of exposure and comply with other applicable requirements of this rule. ~~pursuant to this section~~Paragraph D and ~~comply with the signage requirements outlined in paragraph F.~~

~~.~~4. Retesting. If any change or alteration to an operation or system can materially increase the concentration of hydrogen sulfide, then the operator must retest that operation or system.

D. Determination of Radius of Exposure

1. For all operations subject to this section, the radius of exposure (ROE) shall be determined ~~by following the definition given in B.14~~.

~~b~~2. 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 to the division.

3. For an ~~well~~, operation or system existing on the effective date of this section, the determination, calculation and submission required herein shall be accomplished within ~~180~~360 days of the effective date of this section; for any ~~well,~~ operation or system that commences operations after the effective date of this section, the determination, calculation and submission required herein shall be accomplished, preferably before operations begin but no later than 60 days after initial production~~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 an ~~well,~~ operation or system to increase to 100 ppm or greater or, if the hydrogen sulfide concentration in a well, operation or system was already 100 ppm or greater, 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 to the division ~~within thirty (30) days~~as ~~soon as possible, but no later than~~within sixty (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 that could produce a PHV. The hydrogen sulfide contingency plan ~~should~~shall be ~~developed with~~developed with due consideration of API Standard RP-55 entitled "Recommended Practices for Oil and Gas Producing and Gas Processing Plant Operations Involving Hydrogen Sulfide" but, as a minimum ,~~must~~ shall 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 , in the case of a well being drilled, deepened, or re-entered, may reasonably 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.~~

3. Plan Contents~~4. Elements~~.

The contingency plans shall contain, but not be limited to, information on the following subjects, as appropriate for the operation or system to which it applies:

a. Emergency Procedures
   1. Responsibilities of personnel
   ~~2.~~ Immediate Action plan
   ~~3.~~ Telephone numbers and communication methods for public agencies, emergency response organizations, and public authorities as appropriate
   ~~4.~~ Locations of nearby residences, businesses, parks, schools, churches, roads, medical facilities, etc.
   ~~5.~~ Evacuation routes and road block locations
   ~~6.~~ Procedures for public notification (lists or reaction plans)
   ~~7.~~ 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).
   ~~8.~~ Location and availability of necessary safety equipment and supplies.

b. Characteristics of Hydrogen Sulfide and Sulfur Dioxide

c. Maps, and Drawings
   1. Plats or maps detailing the areas affected by the ROE, specifically delineating any affected public areas and public roads

d. Training and Drills
   1. Responsibilities and duties of essential personnel
   2. On-site or classroom drills
   3. Informing nearby residents on protective measures in emergency situations as appropriate
   4. Training and attendance documentation
   5. Briefing of public officials on issues such as evacuation or shelter-in-place plans

4. Plan Activation. The hydrogen sulfide contingency plan shall address the activation threshold and the events that could lead to that threshold. ~~be activated in the event of a significan release of hydrogen sulfide gas that could produce a PHV.~~ Minimum criteria for activation shall include an event that could result in: a 100-ppm in any public area, a 500 ppm at any public road, 100 ppm 3000 feet from the site of the release, or 50 ppm for 10 minutes at the boundary of the facility.

~~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 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;

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. ~~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.~~ A hydrogen sulfide contingency plan for a ~~well,~~ system or operation existing on the effective date of this section shall be submitted to the Division within ~~180~~360 days from the effective date of this section. A hydrogen sulfide contingency plan for a new ~~well,~~ system or operation shall be submitted, preferabley before operations begin, but no later than 60 days of commencing ~~before~~ operations ~~commence~~. ~~A hydrogen sulfide contingency plan shall be submitted within 180 days if a public area or public road is established that creates a potentially hazardous volume where none previously existed. The hydrogen sulfide contingency plan~~ fFor a drilling, completion, workover or well servicing operation, the hydrogen sulfide contingency plan must be on-file with the division prior to commencing work. The plan may be submitted separately or along with the application for permit to drill (APD) or must be on-file from a previous submittal. On an annual basis, the operator shall file with the applicable local emergency planning committee, and the state emergency response commission, an inventory of the operations and systems where contingency plans are on file with the division and a point of contact

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 or other appropriate enforcement action.

7. ~~Annual Review, Amendment~~Updating Provisions. The ~~person, operator or facility shall review the hydrogen sulfide contingency plan 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~~Contingency Plan shall be periodically reviewed and updated any time its provisions or coverage materially change.

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 Adequacy. Additional requirements may be required in the contingency plan if it has been determined inadequate by the division to protect public safety.

F. 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. Where required. For every operation, or system to which this section applies that is determined to contain a hydrogen sulfide concentration of 100 ppm or greater, signs or markers meeting the requirements outlined below must be installed and maintained.
2. Signs and Markers Specifications. The sign or marker shall conform with the current ANSI standard Z53.1 and shall contain sufficient information and be readily readable by the public to warn that a potential danger exists and shall contain the words "Poison Gas". Signs or markers that have been installed prior to the effective date of

this section and that are in compliance with other applicable regulations (Department of Transportation, OSHA, etc.) shall satisfy the requirements of this section. Other signs and markers that have been installed prior to the effective date of this section shall be acceptable provided that they indicate the presence of a potential hazard. For drilling, workover, completion, and recompletion operations, additional warning measures (e.g., red flags, signs, etc) shall be prominently posted whenever an imminent danger situation exists.

3. Location. Signs and/or markers shall be prominently posted at appropriate locations (e.g., entrance points) for facilities and operations subject to this section.

~~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. Compliance Requirements

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

a. 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 edition.

~~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.~~

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

i. Each drilling and completion site shall have an accurate and precise hydrogen sulfide detection and monitoring system that is capable of automatically activate~~s~~ing visible and audible alarms when the ambient air concentration of hydrogen sulfide ~~reaches~~reaches a predetermined value set by the operator, not to exceed 20 ppm ~~is equal to or less than 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.~~

~~ii~~ii. 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.

~~iv~~iii. 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.

c. Wind Indicators.

i. 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.

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

d. Special Requirements. Where drilling, workover, completion, and recompletion operations occur in areas where the 100 ppm ROE includes a public area, the following additional measures are required:

~~i.The operator shall install a choke manifold, mud-gas separator, and flare line and provide a suitable method for lighting the flare.~~

~~ii.A remote controlled choke and accumulator shall be installed and operational.~~

i. Drilling. A remote controlled well control system 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 control system 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, or integral BOP spool for the kill and choke lines, one dual BOP with one pipe and one blind ram, one annular device and a rotating head. Operators may be required to have available float valves, internal BOP's, stabbing valves, drill stem valves, etc. and other additional~~

~~equipment in order to provide for public safety.~~ 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.

ii. 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 operational at all times before commencing work.

e. Flare System. For drilling and completion operations in an area where it is reasonably expected that a PHV 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.

f. If hydrogen sulfide was not anticipated but is encountered during drilling operations the requirements of this rule must be satisfied, and OCD notified within 24 hours, before drilling operation continues. The OCD may grant verbal approval pending contingency plan preparation.

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

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

~~e. Flare System. For drilling and completion operations, 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.~~

~~f. Use of Well Control Equipment.~~

~~i. Drilling. A remote controlled 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 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.~~

~~ii. Completion, Workover and Well Servicing. 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.~~

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

~~h. Well Testing. Except with prior approval by the division, drill stem testing of a zone that contains hydrogen sulfide shall be closed chamber only, in that formation fluids shall not be permitted to flow to the surface.~~

~~3. 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 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.~~

~~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.~~

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

a. 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.~~

b. Security Provisions~~Fencing.~~ ~~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~~Well sites or other unattended fixed surface facilities shall be protected from public access when the location is within ¼ mile of a public area. This provision shall be provided by fencing and locking, as appropriate. A surface pipeline shall not be considered as a fixed surface facility for this section.

c. Wind Direction Indicators. ~~Wind direction indicators shall be required.~~ Equipment to indicate wind direction shall be present and visible at all times. At least ~~two devices~~one device to indicate wind direction ~~shall be installed at separate elevations~~ shall be installed and visible from all principal working areas at all times

d. Special Requirements. For operations or systems occur in areas where the 100 ppm ROE includes a public area, the following additional measures are required:

i. Operators shall install safety devices (e.g. automatic shut-down devices) and maintain them in an operable condition or shall establish safety procedures designed to prevent the otherwise ~~undetected~~ undetected- continuing escape of hydrogen sulfide.

ii. 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 the downhole accessibility (reentry) under pressure for permanent well control.

~~e. Secondary Well Control. 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. 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.~~

e. 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.~~

f. Compliance Schedule. Each existing crude oil pump station and producing well, tank battery and associated production facility, refinery, gas plant and compressor station not currently meeting the requirements 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.

3. 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. Persons, operators and facilities shall choose equipment with consideration for both the hydrogen sulfide working environment and anticipated stresses. NACE Standard MR0175 (latest edition) or some other standard approved by the division shall be used for selection of metallic equipment or, if applicable, adequate protection by chemical inhibition or other methods that control or limits the corrosive effects of hydrogen sulfide shall be used.~~

~~K. Exemptions. Any person, operator or facility may petition the director 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, 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.~~

~~1~~H. 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 not more than 4 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.

~~5.~~I Standards of Equipment that May be Exposed to Hydrogen Sulfide. ***(Keep the wording that was in "J" of the commission draft, but specify that this applies to PHV areas only).***

~~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.~~

J. Multiple Jurisdiction. Where an existing operation or facility is subject to multiple jurisdictions (e.g., federal, tribe, transportation) and is in compliance with the respective hydrogen sulfide rules of that jurisdiction, it shall be presumed that the operation or facility is also in compliance with this rule. For a new operation or facilty that is subject to multiple jurisdictions, the operation or facility must comply with the most stringent requirements of the respective hydrogen sulfide rules and submit a copy of the contingency plan to the division. At the time that the division requests the operator to make reasonable changes in signage, the contingency plan or other compliance requirements, the operator shall either make those changes within a reasonable time period or petition the division for an exemption.~~H. Reciprocity. Any facility or operation, that is subject to~~

~~another jurisdiction with respect to hydrogen sulfide regulations (e.g., Bureau of Land Management Onshore Order 6) and is in compliance with those regulations, shall be deemed in compliance with this 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.~~

J.K Exemptions. Any person, operator or facility may petition the director, or the director's designee, ~~for~~ 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 designee, after considering all relevant factors, may approve an exemption if the circumstances warrant an exemption.

L. Corrective Actions. The division may require an operator to investigate a public safety concern within its operation and where necessary to safeguard public safety, may require the operator to implement the controls required by this rule or other controls (e.g., repair equipment), if reasonably necessary to contain an uncontrolled release of hydrogen sulfide.

19.15.2.52 Hydrogen Sulfide Gas (Hydrogen Sulfide)

~~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~~A. Applicability. This section is a public safety ~~standard~~ rule that 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 or facility engaged in gathering, transporting, storing, processing or refining of crude oil, natural gas or carbon dioxide. 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.

~~C~~B. 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. ~~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.
   a) For existing gas operations and facilities, t~~T~~he escape rate is calculated using the maximum daily rate of the gaseous mixture produced, 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 gas operations and facilities, the escape rate will 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 off set wells, or the field average of current maximum open-flow rates.
   c) For ~~an~~ existing oil wells and facilities, 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 a new oil well, the escape rate shall be determined by multiplying the producing gas/oil ratio by the maximum daily production rate of offset wells or the field average of current wells. ~~For an oil or natural gas well drilled in a developed area, the escape rate may be determined by using data from offset wells completed in the interval in question, or using some other reasonable means to calculate the escape rate. For facilities or operations not mentioned, the escape rate shall be calculated using the actual flow of the gaseous mixture through the facility or operation.~~
   e) For facilities or operations not mentioned, the escape rate shall be calculated using the actual flow, or a reasonable estimate thereof, of the gaseous mixture through the facility or operation.
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"~~PHV) 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 is ~~equal to or~~ in excess of 3,000 feet.

12. Public Area. A "public area" is any occupied 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, ~~school bus stop,~~ hospital, or government building, or any portion of a park, city, town, village or ~~or~~ an ~~school bus stop or~~ established 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.

~~D~~C. ~~Determination of Hydrogen Sulfide Risk Testing for~~Presence of Hydrogen Sulfide.

1. Determination of Hydrogen Sulfide Concentration.

a. Each person, operator or facility to which this section applies shall determine the hydrogen sulfide concentration within each of its ~~wells.~~ operations or systems. A representative sample or process knowledge may be used in lieu of individual testing of wells~~wells.~~ operations or 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~~well,~~ operation or 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 valid, representative sample from an ~~well,~~ operation or system was tested at any time prior to the effective date of this section, ~~within one (1) year of the effective date of this~~

~~section,~~ 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~~.

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

3. Tested Concentrations Above 100 ppm~~; Calculation of the Radius of Exposure. a.~~ If the concentration of hydrogen sulfide in a given ~~well,~~ operation or system is 100 ppm or greater, then the person, operator or facility must calculate the radius of exposure and comply with other applicable requirements of this rule. ~~pursuant to this section~~~~Paragraph D and comply with the signage requirements outlined in paragraph F.~~

~~.~~4. Retesting. If any change or alteration to an operation or system can materially increase the concentration of hydrogen sulfide, then the operator must retest that operation or system.

D. Determination of Radius of Exposure

1. For all operations subject to this section, the radius of exposure (ROE) shall be determined ~~by following the definition given in B.14~~.

~~b~~2. 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 to the division.

3. For an ~~well~~, operation or system existing on the effective date of this section, the determination, calculation and submission required herein shall be accomplished within ~~180~~360 days of the effective date of this section; for any ~~well,~~ operation or system that commences operations after the effective date of this section, the determination, calculation and submission required herein shall be accomplished, preferably before operations begin but no later than -60 days after initial production~~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 an ~~well,~~ operation or system to increase to 100 ppm or greater or, if the hydrogen sulfide concentration in a well, operation or system was already 100 ppm or greater, 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 to the division ~~within thirty (30) days~~~~as soon as possible, but no later than~~within sixty (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 that could produce a PHV. The hydrogen sulfide contingency plan ~~should~~shall be ~~developed with~~developed with due consideration of API Standard RP-55 entitled "Recommended Practices for Oil and Gas Producing and Gas Processing Plant Operations Involving Hydrogen Sulfide" but, as a minimum ,~~must~~ shall 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 , in the case of a well being drilled, deepened, or re-entered, may reasonably 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.~~

3. Plan Contents~~.~~ ~~4. Elements.~~

The contingency plans shall contain, but not be limited to, information on the following subjects, as appropriate for the operation or system to which it applies.

a. Emergency Procedures
   1. Responsibilities of personnel
   ~~2.~~ Immediate Action plan
   ~~3.~~ Telephone numbers and communication methods for public agencies, emergency response organizations, and public authorities as appropriate
   ~~4.~~ Locations of nearby residences, businesses, parks, schools, churches, roads, medical facilities, etc.
   ~~5.~~ Evacuation routes and road block locations
   ~~6.~~ Procedures for public notification (lists or reaction plans)
   ~~7.~~ 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).
   ~~8.~~ Location and availability of necessary safety equipment and supplies.

b. Characteristics of Hydrogen Sulfide and Sulfur Dioxide

c. Maps, and Drawings
   1. Plats or maps detailing the areas affected by the ROE, specifically delineating any affected public areas and public roads

d. Training and Drills
   1. Responsibilities and duties of essential personnel
   2. On-site or classroom drills
   3. Informing nearby residents of protective measures in emergency situations as appropriate
   4. Training and attendance documentation
   5. Briefing of public officials on issues such as evacuation or shelter-in-place plans

4. Plan Activation. The hydrogen sulfide contingency plan shall address the activation threshold and the events that could lead to that threshold. ~~be activated in the event of a significan release of hydrogen sulfide gas that could produce a PHV.~~ Minimum criteria for activation shall include an event that could result in: a 100-ppm in any public area, a 500 ppm at any public road, 100 ppm 3000 feet from the site of the release, or 50 ppm for 10 minutes at the boundary of the facility.

~~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 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;~~

~~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. ~~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.~~ A hydrogen sulfide contingency plan for a ~~well,~~ system or operation existing on the effective date of this section shall be submitted to the Division within ~~180~~360 days from the effective date of this section. A hydrogen sulfide contingency plan for a new ~~well,~~ system or operation shall be submitted, preferably before operations begin, but no later than 60 days of commencing ~~before~~ operations ~~commence~~. ~~A hydrogen sulfide contingency plan shall be submitted within 180 days if a public area or public road is established that creates a potentially hazardous volume where none previously existed. The hydrogen sulfide contingency plan~~ ~~f~~For a drilling, completion, workover or well servicing operation, the hydrogen sulfide contingency plan must be on-file with the division prior to commencing work. The plan may be submitted separately or along with the application for permit to drill (APD) or must be on-file from a previous submittal. On an annual basis, the operator shall file with the applicable local emergency planning committee, and the state emergency response commission, an inventory of the operations and systems where contingency plans are on file with the division and a point of contact

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 or other appropriate enforcement action.

7. ~~Annual Review, Amendment~~Updating Provisions. The ~~person, operator or facility shall review the hydrogen sulfide contingency plan 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~~Contingency Plan shall be periodically reviewed and updated any time its provisions or coverage materially change.

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 Adequacy. Additional requirements may be required in the contingency plan if it has been determined inadequate by the division to protect public safety.

F. 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. Where required. For every operation, or system to which this section applies that is determined to contain a hydrogen sulfide concentration of 100 ppm or greater, signs or markers meeting the requirements outlined below must be installed and maintained.
2. Signs and Markers Specifications. The sign or marker shall conform with the current ANSI standard Z53.1 and shall contain sufficient information and be readily readable by the public to warn that a potential danger exists and shall contain the words "Poison Gas". Signs or markers that have been installed prior to the effective date of

this section and that are in compliance with other applicable regulations (Department of Transportation, OSHA, etc.) shall satisfy the requirements of this section. Other signs and markers that have been installed prior to the effective date of this section shall be acceptable provided that they indicate the presence of a potential hazard. For drilling, workover, completion, and recompletion operations, additional warning measures (e.g., red flags, signs, etc) shall be prominently posted whenever an imminent danger situation exists.

3. Location. Signs and/or markers shall be prominently posted at appropriate locations (e.g., entrance points) for facilities and operations subject to this section.

~~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. Compliance Requirements

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

a. 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 edition.

~~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.~~

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

i. Each drilling and completion site shall have an accurate and precise hydrogen sulfide detection and monitoring system that is capable of automatically activatesing visible and audible alarms when the ambient air concentration of hydrogen sulfide ~~reaches~~reaches a predetermined value set by the operator, not to exceed 20 ppm ~~is equal to or less than 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.~~

~~iii~~ii. 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.

~~iv~~iii. 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.

c. Wind Indicators.

i. 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.

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

d. Special Requirements. Where drilling, workover, completion, and recompletion operations occur in areas where the 100 ppm ROE includes a public area, the following additional measures are required:

~~i.The operator shall install a choke manifold, mud-gas separator, and flare line and provide a suitable method for lighting the flare.~~

~~ii.A remote controlled choke and accumulator shall be installed and operational.~~

i. Drilling. A remote controlled well control system 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 control system 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, or integral BOP spool for the kill and choke lines, one dual BOP with one pipe and one blind ram, one annular device and a rotating head. Operators may be required to have available float valves, internal BOP's, stabbing valves, drill stem valves, etc. and other additional~~

~~equipment in order to provide for public safety.~~ 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.

ii. 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 operational at all times before commencing work.

e. Flare System. For drilling and completion operations in an area where it is reasonably expected that a PHV 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.

f. If hydrogen sulfide was not anticipated but is encountered during drilling operations the requirements of this rule must be satisfied, and OCD notified within 24 hours, before drilling operation continues. The OCD may grant verbal approval pending contingency plan preparation.

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

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

~~e. Flare System. For drilling and completion operations, 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.~~

~~f. Use of Well Control Equipment.~~

~~i. Drilling. A remote controlled 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 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.~~

~~ii. Completion, Workover and Well Servicing. 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.~~

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

~~h. Well Testing. Except with prior approval by the division, drill stem testing of a zone that contains hydrogen sulfide shall be closed chamber only, in that formation fluids shall not be permitted to flow to the surface.~~

~~3. 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 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.~~

~~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.~~

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

a. 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.~~

b. Security Provisions~~Fencing.~~ ~~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~~Well sites or other unattended fixed surface facilities shall be protected from public access when the location is within ¼ mile of a public area. This provision shall be provided by fencing and locking, as appropriate. A surface pipeline shall not be considered as a fixed surface facility for this section.

c. Wind Direction Indicators. ~~Wind direction indicators shall be required.~~ Equipment to indicate wind direction shall be present and visible at all times. At least ~~two devices~~one device to indicate wind direction ~~shall be installed at separate elevations~~ shall be installed and visible from all principal working areas at all times

d. Special Requirements. For operations or systems occur in areas where the 100 ppm ROE includes a public area, the following additional measures are required:

i. Operators shall install safety devices (e.g. automatic shut-down devices) and maintain them in an operable condition or shall establish safety procedures designed to prevent the otherwise ~~undetected~~ undetected- continuing escape of hydrogen sulfide.

ii. 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 the downhole accessibility (reentry) under pressure for permanent well control.

~~e. Secondary Well Control. 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. 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.~~

e. 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.~~

f. Compliance Schedule. Each existing crude oil pump station and producing well, tank battery and associated production facility, refinery, gas plant and compressor station not currently meeting the requirements 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.

3. 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. Persons, operators and facilities shall choose equipment with consideration for both the hydrogen sulfide working environment and anticipated stresses. NACE Standard MR0175 (latest edition) or some other standard approved by the division shall be used for selection of metallic equipment or, if applicable, adequate protection by chemical inhibition or other methods that control or limits the corrosive effects of hydrogen sulfide shall be used.~~

~~K. Exemptions. Any person, operator or facility may petition the director 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, 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.~~

~~4.~~H. 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 not more than 4 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.

~~5.~~I Standards of Equipment that May be Exposed to Hydrogen Sulfide. ***(Keep the wording that was in "J" of the commission draft, but specify that this applies to PHV areas only).***

~~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.~~

J. Multiple Jurisdiction. Where an existing operation or facility is subject to multiple jurisdictions (e.g., federal, tribe, transportation) and is in compliance with the respective hydrogen sulfide rules of that jurisdiction, it shall be presumed that the operation or facility is also in compliance with this rule. For a new operation or facilty that is subject to multiple jurisdictions, the operation or facility must comply with the most stringent requirements of the respective hydrogen sulfide rules and submit a copy of the contingency plan to the division. At the time that the division requests the operator to make reasonable changes in signage, the contingency plan or other compliance requirements, the operator shall either make those changes within a reasonable time period or petition the division for an exemption.~~H. Reciprocity. Any facility or operation, that is subject to~~

~~another jurisdiction with respect to hydrogen sulfide regulations (e.g., Bureau of Land Management Onshore Order 6) and is in compliance with those regulations, shall be deemed in compliance with this 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.~~

~~I~~.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 designee, after considering all relevant factors, may approve an exemption if the circumstances warrant an exemption.

L. Corrective Actions. The division may require an operator to investigate a public safety concern within its operation and where necessary to safeguard public safety, may require the operator to implement the controls required by this rule or other controls (e.g., repair equipment), if reasonably necessary to contain an uncontrolled release of hydrogen sulfide.

19.15.2.52 Hydrogen Sulfide Gas (Hydrogen Sulfide)

~~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~~A. Applicability. This section is a public safety ~~standard~~ rule that 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 or facility engaged in gathering, transporting, storing, processing or refining of crude oil, natural gas or carbon dioxide. 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.

~~C~~B. 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. ~~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.
   a) For existing gas operations and facilities, t~~T~~he escape rate is calculated using the maximum daily rate of the gaseous mixture produced, 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 gas operations and facilities, the escape rate will 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 off set wells, or the field average of current maximum open-flow rates.
   c) For ~~an~~ existing oil wells and facilities, 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 a new oil well, the escape rate shall be determined by multiplying the producing gas/oil ratio by the maximum daily production rate of offset wells or the field average of current wells. ~~For an oil or natural gas well drilled in a developed area, the escape rate may be determined by using data from offset wells completed in the interval in question, or using some other reasonable means to calculate the escape rate. For facilities or operations not mentioned, the escape rate shall be calculated using the actual flow of the gaseous mixture through the facility or operation.~~
   e) For facilities or operations not mentioned, the escape rate shall be calculated using the actual flow, or a reasonable estimate thereof, of the gaseous mixture through the facility or operation.
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" or "PHV")~~ 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 ~~is equal to or~~ in excess of 3,000 feet.

12. Public Area. A "public area" is any occupied 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, ~~school bus stop,~~ hospital, or government building, or any portion of a park, city, town, village or ~~or~~ an ~~school bus stop or~~ established 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.

~~D~~C. ~~Determination of Hydrogen Sulfide Risk~~Testing for Presence of Hydrogen Sulfide.

1. Determination of Hydrogen Sulfide Concentration.

a. Each person, operator or facility to which this section applies shall determine the hydrogen sulfide concentration within each of its ~~wells,~~ operations or systems. A representative sample or process knowledge may be used in lieu of individual testing of wells~~wells,~~ operations or 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~~well,~~ operation or 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 valid, representative sample from an ~~well,~~ operation or system was tested at any time prior to the effective date of this section, ~~within one (1) year of the effective date of this~~

~~section,~~ 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~~.

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

3. Tested Concentrations Above 100 ppm~~; Calculation of the Radius of Exposure. a.~~ If the concentration of hydrogen sulfide in a given ~~well,~~ operation or system is 100 ppm or greater, then the person, operator or facility must calculate the radius of exposure and comply with other applicable requirements of this rule~~ pursuant to this sectionParagraph D and comply with the signage requirements outlined in paragraph F.~~

~~4~~. Retesting. If any change or alteration to ~~an~~ operation or system can materially increase the concentration of hydrogen sulfide, then the ~~operator~~ must ~~retest that~~ operation or system shall be retested.

D. Determination of Radius of Exposure

1. ~~For all operations subject to this section,~~ the radius of exposure (ROE) shall be determined ~~by following the definition given in B.14~~.

~~b~~2. 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 to the division.

3. For an ~~well,~~ operation or system existing on the effective date of this section, the determination, calculation and submission required herein ~~shall~~ be accomplished within ~~180~~360 days of the effective date of this section; for any ~~well,~~ operation or system that commences operations after the effective date of this section, the determination, calculation and submission required herein shall be accomplished, preferably before operations begin but no later than -60 days after initial production~~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 an ~~well,~~ operation or system to increase to 100 ppm or greater or, if the hydrogen sulfide concentration in a well, operation or system was already 100 ppm or greater, 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 to the division ~~within thirty (30) daysas soon as possible, but no later than~~within sixty (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 that could produce a PHV. The hydrogen sulfide contingency plan ~~should~~shall be ~~developed with~~developed with due consideration of API Standard RP-55 entitled "Recommended Practices for Oil and Gas Producing and Gas Processing Plant Operations Involving Hydrogen Sulfide" but, as a minimum ,~~must~~ shall 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 , in the case of a well being drilled, deepened, or re-entered, may reasonably 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.~~

3. Plan Contents~~4. Elements~~.

The contingency plans shall contain, but not be limited to, information on the following subjects, as appropriate for the operation or system to which it applies:

well

a. Emergency Procedures
   1. Responsibilities of personnel
   ~~2.~~ Immediate Action plan
   ~~3.~~ Telephone numbers and communication methods for public agencies, emergency response organizations, and public authorities as appropriate
   ~~4.~~ Locations of nearby residences, businesses, parks, schools, churches, roads, medical facilities, etc.
   ~~5.~~ Evacuation routes and road block locations
   ~~6.~~ Procedures for public notification (lists or reaction plans)
   ~~7.~~ 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).
   ~~8.~~ Location and availability of necessary safety equipment and supplies.

b. Characteristics of Hydrogen Sulfide and Sulfur Dioxide
c. Maps, and Drawings
   1. Plats or maps detailing the areas affected by the ROE, specifically delineating any affected public areas and public roads
d. Training and Drills
   1. Responsibilities and duties of essential personnel
   2. On-site or classroom drills
   3. Informing nearby residents on protective measures in emergency situations as appropriate
   4. Training and attendance documentation
   5. Briefing of public officials on issues such as evacuation or shelter-in-place plans

4. Plan Activation. The hydrogen sulfide contingency plan shall address the activation threshold and the events that could lead to that threshold ~~be activated in the event of a significan release of hydrogen sulfide gas that could produce a PHV.~~ Minimum criteria for activation shall include an event that could result in: a 100-ppm in any public area, a 500 ppm at any public road, 100 ppm 3000 feet from the site of the release, or 50 ppm for 10 minutes at the boundary of the facility.

~~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 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;~~

~~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. ~~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.~~ A hydrogen sulfide contingency plan for a ~~well, system or~~ operation existing on the effective date of this section shall be submitted to the Division within ~~180~~ 60 days from the effective date of this section. A hydrogen sulfide contingency plan for a new ~~well,~~ system or operation shall be submitted, preferably before operations begin, but no later than 60 days of commencing ~~before~~ operations ~~commence~~. ~~A hydrogen sulfide contingency plan shall be submitted within 180 days if a public area or public road is established that creates a potentially hazardous volume where none previously existed. The hydrogen sulfide contingency plan~~ ~~f~~For a drilling, completion, workover or well servicing operation, the hydrogen sulfide contingency plan must be on-file with the division prior to commencing work. The plan may be submitted separately or along with the application for permit to drill (APD) or must be on-file from a previous submittal. On an annual basis, the operator shall file with the applicable local emergency planning committee, and the state emergency response commission, an inventory of the operations and systems where contingency plans are on file with the division and a point of contact.

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 or other appropriate enforcement action.

7. ~~Annual Review, Amendment~~Updating Provisions. The ~~person, operator or facility shall review the hydrogen sulfide contingency plan 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~~Contingency Plan shall be periodically reviewed and updated any time its provisions or coverage materially change.

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 Adequacy. Additional requirements may be required in the contingency plan if it has been determined inadequate by the division to protect public safety.

F. 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. Where required. For every operation, or system to which this section applies that is determined to contain a hydrogen sulfide concentration of 100 ppm or greater, signs or markers meeting the requirements outlined below must be installed and maintained.
2. ~~Signs and Markers Specifications~~. The sign or marker shall conform with the current ANSI standard Z53.1 and shall contain sufficient information and be readily readable by the public to warn that a potential danger exists and shall contain the words "Poison Gas". Signs or markers that have been installed prior to the effective date of

this section and that are in compliance with other applicable regulations (Department of Transportation, OSHA, etc.) shall satisfy the requirements of this section. Other signs and markers that have been installed prior to the effective date of this section shall be acceptable provided that they indicate the presence of a potential hazard. For drilling, workover, completion, and recompletion operations, additional warning measures (e.g., red flags, signs, etc) shall be prominently posted whenever an imminent danger situation exists.

3. Location. Signs and/or markers shall be prominently posted at appropriate locations (e.g., entrance points) for facilities and operations subject to this section.

~~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. Compliance Requirements

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

a. 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 edition.

~~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.~~

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

i. Each drilling and completion site shall have an accurate and precise hydrogen sulfide detection and monitoring system that is capable of automatically activate~~s~~ing visible and audible alarms when the ambient air concentration of hydrogen sulfide ~~reaches~~reaches a predetermined value set by the operator, not to exceed 20 ppm ~~is equal to or less than 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.~~

~~iii~~ii. 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.

~~iv~~iii. 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.

c. Wind Indicators.

i. 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.

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

d. Special Requirements. Where drilling, workover, completion, and recompletion operations occur in areas where the 100 ppm ROE includes a public area, the following additional measures are required:

~~i.The operator shall install a choke manifold, mud-gas separator, and flare line and provide a suitable method for lighting the flare.~~

~~ii.A remote controlled choke and accumulator shall be installed and operational.~~

i. Drilling. A remote controlled well control system 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 control system 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, or integral BOP spool for the kill and choke lines, one dual BOP with one pipe and one blind ram, one annular device and a rotating head. Operators may be required to have available float valves, internal BOP's, stabbing valves, drill stem valves, etc. and other additional~~

~~equipment in order to provide for public safety.~~ 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.

ii. 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 operational at all times before commencing work.

e. Flare System. For drilling and completion operations in an area where it is reasonably expected that a PHV 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.

f. If hydrogen sulfide was not anticipated but is encountered during drilling operations the requirements of this rule must be satisfied, and OCD notified within 24 hours, before drilling operation continues. ~~The~~ OCD may grant verbal approval pending contingency plan preparation.

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

100 ppm

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

~~e. Flare System. For drilling and completion operations, 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.~~

~~f. Use of Well Control Equipment.~~

~~i. Drilling. A remote controlled 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 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.~~

~~ii. Completion, Workover and Well Servicing. 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.~~

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

~~h. Well Testing. Except with prior approval by the division, drill stem testing of a zone that contains hydrogen sulfide shall be closed chamber only, in that formation fluids shall not be permitted to flow to the surface.~~

~~3. 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 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.~~

~~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.~~

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

a. 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.

100 ppm

~~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.~~

b. Security Provisions~~Fencing.~~ ~~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~~Well sites or other unattended fixed surface facilities shall be protected from public access when the location is within ¼ mile of a public area. This provision shall be provided by fencing and locking, as appropriate. A surface pipeline shall not be considered as a fixed surface facility for this section.

1/4 mile

c. Wind Direction Indicators. ~~Wind direction indicators shall be required.~~ Equipment to indicate wind direction shall be present and visible at all times. At least ~~two devices~~one device to indicate wind direction ~~shall be installed at separate elevations~~ shall be installed and visible from all principal working areas at all times

d. Special Requirements. For operations or systems occur in areas where the 100 ppm ROE includes a public area, the following additional measures are required:

i. Operators shall install safety devices (e.g. automatic shut-down devices) and maintain them in an operable condition or shall establish safety procedures designed to prevent the otherwise ~~undetected~~ undetected- continuing escape of hydrogen sulfide.

ii. 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 the downhole accessibility (reentry) under pressure for permanent well control.

~~c. Secondary Well Control. 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. 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.~~

e. 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.~~

f. Compliance Schedule. Each existing crude oil pump station and producing well, tank battery and associated production facility, refinery, gas plant and compressor station not currently meeting the requirements 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.

3. 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. Persons, operators and facilities shall choose equipment with consideration for both the hydrogen sulfide working environment and anticipated stresses. NACE Standard MR0175 (latest edition) or some other standard approved by the division shall be used for selection of metallic equipment or, if applicable, adequate protection by chemical inhibition or other methods that control or limits the corrosive effects of hydrogen sulfide shall be used.~~

~~K. Exemptions. Any person, operator or facility may petition the director 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, 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.~~

~~4.~~H. 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 not more than 4 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.

~~5.~~1 Standards of Equipment that May be Exposed to Hydrogen Sulfide. ***(Keep the wording that was in "J" of the commission draft, but specify that this applies to PHV areas only).***

~~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.~~

J. Multiple Jurisdiction. Where an existing operation or facility is subject to multiple jurisdictions (e.g., federal, tribe, transportation) and is in compliance with the respective hydrogen sulfide rules of that jurisdiction, it shall be presumed that the operation or facility is also in compliance with this rule. For a new operation or facilty that is subject to multiple jurisdictions, the operation or facility must comply with the most stringent requirements of the respective hydrogen sulfide rules and submit a copy of the contingency plan to the division. At the time that the division requests the operator to make reasonable changes in signage, the contingency plan or other compliance requirements, the operator shall either make those changes within a reasonable time period or petition the division for an exemption. ~~H. Reciprocity. Any facility or operation, that is subject to~~

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~~another jurisdiction with respect to hydrogen sulfide regulations (e.g., Bureau of Land Management Onshore Order 6) and is in compliance with those regulations, shall be deemed in compliance with this 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.~~

~~I.~~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 designee, after considering all relevant factors, may approve an exemption if the circumstances warrant an exemption.

L. Corrective Actions. The division may require an operator to investigate a public safety concern within its operation and where necessary to safeguard public safety, may require the operator to implement the controls required by this rule or other controls (e.g., repair equipment), if reasonably necessary to contain an uncontrolled release of hydrogen sulfide.

19.15.2.52 Hydrogen Sulfide Gas (Hydrogen Sulfide)

~~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~~A. Applicability. This section is a public safety ~~standard~~ rule that 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 or facility engaged in gathering, transporting, storing, processing or refining of crude oil, natural gas or carbon dioxide. 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.

~~C~~B. 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. ~~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.
   a) For existing gas operations and facilities, t~~T~~he escape rate is calculated using the maximum daily rate of the gaseous mixture produced, 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 gas operations and facilities, the escape rate will 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 off set wells, or the field average of current maximum open-flow rates.
   c) For ~~an~~ existing oil wells and facilities, 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 a new oil well, the escape rate shall be determined by multiplying the producing gas/oil ratio by the maximum daily production rate of offset wells or the field average of current wells. ~~For an oil or natural gas well drilled in a developed area, the escape rate may be determined by using data from offset wells completed in the interval in question, or using some other reasonable means to calculate the escape rate. For facilities or operations not mentioned, the escape rate shall be calculated using the actual flow of the gaseous mixture through the facility or operation.~~
   e) For facilities or operations not mentioned, the escape rate shall be calculated using the actual flow, or a reasonable estimate thereof, of the gaseous mixture through the facility or operation.
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"~~PHV) 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 is ~~equal to or~~ in excess of 3,000 feet.

12. Public Area. A "public area" is any occupied 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, ~~school bus stop,~~ hospital, or government building, or any portion of a park, city, town, village or ~~or~~ an ~~school bus stop or~~ established 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.

~~D~~C. ~~Determination of Hydrogen Sulfide Risk Testing for~~Presence of Hydrogen Sulfide.

1. Determination of Hydrogen Sulfide Concentration.

a. Each person, operator or facility to which this section applies shall determine the hydrogen sulfide concentration within each of its ~~wells,~~ operations or systems. A representative sample or process knowledge may be used in lieu of individual testing of wells~~wells,~~ operations or 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~~well,~~ operation or 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 valid, representative sample from an ~~well,~~ operation or system was tested at any time prior to the effective date of this section, ~~within one (1) year of the effective date of this~~

~~section,~~ 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~~.

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

3. Tested Concentrations Above 100 ppm~~; Calculation of the Radius of Exposure. a.~~ If the concentration of hydrogen sulfide in a given ~~well,~~ operation or system is 100 ppm or greater, then the person, operator or facility must calculate the radius of exposure and comply with other applicable requirements of this rule. ~~pursuant to this section~~Paragraph D ~~and comply with the signage requirements outlined in paragraph F.~~

~~.~~4. Retesting. If any change or alteration to an operation or system can materially increase the concentration of hydrogen sulfide, then the operator must retest that operation or system.

D. Determination of Radius of Exposure

1. For all operations subject to this section, the radius of exposure (ROE) shall be determined ~~by following the definition given in B.14~~.

~~b~~2. 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 to the division.

3. For an ~~well~~, operation or system existing on the effective date of this section, the determination, calculation and submission required herein shall be accomplished within ~~180~~360 days of the effective date of this section; for any ~~well,~~ operation or system that commences operations after the effective date of this section, the determination, calculation and submission required herein shall be accomplished, preferably before operations begin but no later than 60 days after initial production~~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 an ~~well,~~ operation or system to increase to 100 ppm or greater or, if the hydrogen sulfide concentration in a well, operation or system was already 100 ppm or greater, 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 to the division ~~within thirty (30) days~~~~as soon as possible, but no later than~~within sixty (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 that could produce a PHV. The hydrogen sulfide contingency plan ~~should~~shall be ~~developed with~~developed with due consideration of API Standard RP-55 entitled "Recommended Practices for Oil and Gas Producing and Gas Processing Plant Operations Involving Hydrogen Sulfide" but, as a minimum ,~~must~~ shall 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 , in the case of a well being drilled, deepened, or re-entered, may reasonably 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.~~

3. Plan Contents~~4. Elements~~.

The contingency plans shall contain, but not be limited to, information on the following subjects, as appropriate for the operation or system to which it applies:

a. Emergency Procedures
   1. Responsibilities of personnel
   ~~2.~~ Immediate Action plan
   ~~3.~~ Telephone numbers and communication methods for public agencies, emergency response organizations, and public authorities as appropriate
   ~~4.~~ Locations of nearby residences, businesses, parks, schools, churches, roads, medical facilities, etc.
   ~~5.~~ Evacuation routes and road block locations
   ~~6.~~ Procedures for public notification (lists or reaction plans)
   ~~7.~~ 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).
   ~~8.~~ Location and availability of necessary safety equipment and supplies.

b. Characteristics of Hydrogen Sulfide and Sulfur Dioxide

c. Maps, and Drawings
   1. Plats or maps detailing the areas affected by the ROE, specifically delineating any affected public areas and public roads

d. Training and Drills
   1. Responsibilities and duties of essential personnel
   2. On-site or classroom drills
   3. Informing nearby residents on protective measures in emergency situations as appropriate
   4. Training and attendance documentation
   5. Briefing of public officials on issues such as evacuation or shelter-in-place plans

4. Plan Activation. The hydrogen sulfide contingency plan shall address the activation threshold and the events that could lead to that threshold. ~~be activated in the event of a significan release of hydrogen sulfide gas that could produce a PHV.~~ Minimum criteria for activation shall include an event that could result in: a 100-ppm in any public area, a 500 ppm at any public road, 100 ppm 3000 feet from the site of the release, or 50 ppm for 10 minutes at the boundary of the facility.

~~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 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;~~

~~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. ~~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.~~ A hydrogen sulfide contingency plan for a ~~well,~~ system or operation existing on the effective date of this section shall be submitted to the Division within ~~180~~360 days from the effective date of this section. A hydrogen sulfide contingency plan for a new ~~well.~~ system or operation shall be submitted, preferablyey before operations begin, but no later than 60 days of commencing ~~before~~ operations ~~commence~~. ~~A hydrogen sulfide contingency plan shall be submitted within 180 days if a public area or public road is established that creates a potentially hazardous volume where none previously existed. The hydrogen sulfide contingency plan~~ fFor a drilling, completion, workover or well servicing operation, the hydrogen sulfide contingency plan must be on-file with the division prior to commencing work. The plan may be submitted separately or along with the application for permit to drill (APD) or must be on-file from a previous submittal. On an annual basis, the operator shall file with the applicable local emergency planning committee, and the state emergency response commission, an inventory of the operations and systems where contingency plans are on file with the division and a point of contact

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 or other appropriate enforcement action.

7. ~~Annual Review, Amendment~~Updating Provisions. The ~~person, operator or facility shall review the hydrogen sulfide contingency plan 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~~Contingency Plan shall be periodically reviewed and updated any time its provisions or coverage materially change.

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 Adequacy. Additional requirements may be required in the contingency plan if it has been determined inadequate by the division to protect public safety.

F. 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. Where required. For every operation, or system to which this section applies that is determined to contain a hydrogen sulfide concentration of 100 ppm or greater, signs or markers meeting the requirements outlined below must be installed and maintained.
2. Signs and Markers Specifications. The sign or marker shall conform with the current ANSI standard Z53.1 and shall contain sufficient information and be readily readable by the public to warn that a potential danger exists and shall contain the words "Poison Gas". Signs or markers that have been installed prior to the effective date of

this section and that are in compliance with other applicable regulations (Department of Transportation, OSHA, etc.) shall satisfy the requirements of this section. Other signs and markers that have been installed prior to the effective date of this section shall be acceptable provided that they indicate the presence of a potential hazard. For drilling, workover, completion, and recompletion operations, additional warning measures (e.g., red flags, signs, etc) shall be prominently posted whenever an imminent danger situation exists.

3. Location. Signs and/or markers shall be prominently posted at appropriate locations (e.g., entrance points) for facilities and operations subject to this section.

~~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. Compliance Requirements

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

a. 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 edition.

~~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.~~

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

i. Each drilling and completion site shall have an accurate and precise hydrogen sulfide detection and monitoring system that is capable of automatically activatesing visible and audible alarms when the ambient air concentration of hydrogen sulfide ~~reaches~~reaches a predetermined value set by the operator, not to exceed 20 ppm ~~is equal to or less than 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.~~

~~iii~~ii. 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.

~~iv~~iii. 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.

c. Wind Indicators.

i. 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.

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

d. Special Requirements. Where drilling, workover, completion, and recompletion operations occur in areas where the 100 ppm ROE includes a public area, the following additional measures are required:

~~i.The operator shall install a choke manifold, mud-gas separator, and flare line and provide a suitable method for lighting the flare.~~

~~ii.A remote controlled choke and accumulator shall be installed and operational.~~

i. Drilling. A remote controlled well control system 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 control system 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, or integral BOP spool for the kill and choke lines, one dual BOP with one pipe and one blind ram, one annular device and a rotating head. Operators may be required to have available float valves, internal BOP's, stabbing valves, drill stem valves, etc. and other additional~~

~~equipment in order to provide for public safety.~~ 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.

ii. 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 operational at all times before commencing work.

e. Flare System. For drilling and completion operations in an area where it is reasonably expected that a PHV 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.

f. If hydrogen sulfide was not anticipated but is encountered during drilling operations the requirements of this rule must be satisfied, and OCD notified within 24 hours, before drilling operation continues. The OCD may grant verbal approval pending contingency plan preparation.

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

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

~~e. Flare System. For drilling and completion operations, 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.~~

~~f. Use of Well Control Equipment.~~

~~i. Drilling. A remote controlled 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 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.~~

~~ii. Completion, Workover and Well Servicing. 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.~~

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

~~h. Well Testing. Except with prior approval by the division, drill stem testing of a zone that contains hydrogen sulfide shall be closed chamber only, in that formation fluids shall not be permitted to flow to the surface.~~

~~3. 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 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.~~

~~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.~~

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

a. 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.~~

b. Security Provisions~~Fencing.~~ ~~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~~Well sites or other unattended fixed surface facilities shall be protected from public access when the location is within ¼ mile of a public area. This provision shall be provided by fencing and locking, as appropriate. A surface pipeline shall not be considered as a fixed surface facility for this section.

c. Wind Direction Indicators. ~~Wind direction indicators shall be required.~~ Equipment to indicate wind direction shall be present and visible at all times. At least ~~two devices~~one device to indicate wind direction ~~shall be installed at separate elevations~~ shall be installed and visible from all principal working areas at all times

d. Special Requirements. For operations or systems occur in areas where the 100 ppm ROE includes a public area, the following additional measures are required:

i. Operators shall install safety devices (e.g. automatic shut-down devices) and maintain them in an operable condition or shall establish safety procedures designed to prevent the otherwise ~~undetected~~ undetected continuing escape of hydrogen sulfide.

ii. 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 the downhole accessibility (reentry) under pressure for permanent well control.

~~e. Secondary Well Control. 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. 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.~~

e. 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.~~

f. Compliance Schedule. Each existing crude oil pump station and producing well, tank battery and associated production facility, refinery, gas plant and compressor station not currently meeting the requirements 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.

3. 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. Persons, operators and facilities shall choose equipment with consideration for both the hydrogen sulfide working environment and anticipated stresses. NACE Standard MR0175 (latest edition) or some other standard approved by the division shall be used for selection of metallic equipment or, if applicable, adequate protection by chemical inhibition or other methods that control or limits the corrosive effects of hydrogen sulfide shall be used.~~

~~K. Exemptions. Any person, operator or facility may petition the director 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, 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.~~

~~1.~~H. 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 not more than 4 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.

~~5.~~I Standards of Equipment that May be Exposed to Hydrogen Sulfide. ***(Keep the wording that was in "J" of the commission draft, but specify that this applies to PHV areas only).***

~~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.~~

J. Multiple Jurisdiction. Where an existing operation or facility is subject to multiple jurisdictions (e.g., federal, tribe, transportation) and is in compliance with the respective hydrogen sulfide rules of that jurisdiction, it shall be presumed that the operation or facility is also in compliance with this rule. For a new operation or facilty that is subject to multiple jurisdictions, the operation or facility must comply with the most stringent requirements of the respective hydrogen sulfide rules and submit a copy of the contingency plan to the division. At the time that the division requests the operator to make reasonable changes in signage, the contingency plan or other compliance requirements, the operator shall either make those changes within a reasonable time period or petition the division for an exemption. ~~H. Reciprocity. Any facility or operation, that is subject to~~

~~another jurisdiction with respect to hydrogen sulfide regulations (e.g., Bureau of Land Management Onshore Order 6) and is in compliance with those regulations, shall be deemed in compliance with this 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.~~

~~I~~.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 designee, after considering all relevant factors, may approve an exemption if the circumstances warrant an exemption.

L. Corrective Actions. The division may require an operator to investigate a public safety concern within its operation and where necessary to safeguard public safety, may require the operator to implement the controls required by this rule or other controls (e.g., repair equipment), if reasonably necessary to contain an uncontrolled release of hydrogen sulfide.

~~OUTLINE OF RULE:~~

~~Hydrogen Sulfide Gas~~
~~A. In General.~~
~~B. Applicability.~~
~~C. Definitions.~~
~~D. Determination of Hydrogen Sulfide Risk~~
~~E. Public Contingency Plan~~
~~F. Drilling Contingency Plan~~
~~G. Protection from Hydrogen Sulfide During Drilling, Workover and Servicing.~~
~~H. Protection from Hydrogen Sulfide at Producing Wells, Tank Batteries and Associated Production Facilities.~~
~~I. Personnel Protection and Training.~~
~~J. Standards for Equipment that May be Exposed to Hydrogen Sulfide.~~
~~K. Hydrogen Sulfide Injection.~~
~~L. Exemptions.~~
~~M. Release.~~
~~N. Minimum Standards.~~

19.15.2.__ Hydrogen Sulfide Gas (Hydrogen Sulfide)

A. In General. Hydrogen Sulfide Gas (known by its chemical abbreviation " H_2S" or as "sulfurated hydrogen" or "hydrosulfuric acid") is a flammable, poisonous gas that occurs naturally as a component of crude petroleum and natural gas. The gas, ~~and its combustion product, sulfur dioxide ($S0_2$),~~ presents severe threats to human health and can be fatal in high concentrations. The gas has a distinct and characteristic odor of rotten eggs.

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, completing, working over or producing any oil, natural gas or carbon dioxide well, or any person, operator or facility engaged in gathering, transporting, storing, processing, or refining of crude oil, natural gas or carbon dioxide where it is determined pursuant to D.1 below that H_2S concentrations exceed 100 ppm.

C. Definitions (specific to this Rule).

1. API. "API" means the American Petroleum Institute, 300 Corrigan Tower Building, Dallas, Texas, 75201.

2. 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.

3. 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. The escape rate is calculated using the maximum daily rate of the gaseous mixture produced or the best estimate thereof. For a natural gas well, the escape rate shall be calculated by using the current daily absolute openflow rate against atmospheric pressure. For an oil well, the escape rate shall be calculated by multiplying the producing gas/oil ratio by the maximum daily production rate or best estimate thereof. For an oil or natural gas well drilled in an undeveloped area (a wildcat well), the escape rate may be determined by using offset wells completed in the interval(s) in question, or using some other reasonable means to calculate the escape rate. For facilities or operations not mentioned, the escape rate shall be calculated using the actual flow of gaseous mixture through the facility or operation.

4. PPM. The abbreviation "ppm" means "parts per million."

~~5. Potentially Hazardous Volume. The phrase "potentially hazardous volume" means a volume of hydrogen sulfide gas whose volume, concentration and flow rate is such that, if released, any of the following conditions would exist: (a) a concentration of 100 ppm or greater at any residence, school, church, park, school bus stop, place of business or other area where any person could reasonably be expected to be~~

~~present; (b) a concentration of 300 ppm or greater at any federal, state, county, municipal or public road or highway; or (c) a concentration of 100 ppm or greater at a distance of 3,000 feet from the site of release.~~

5. Potentially Hazardous Volume (PHV) of Hydrogen Sulfide. This means the volume of hydrogen sulfide gas of such concentration that:

a. the 100 ppm radius of exposure (ROE) includes any residence, school, church, park, school bus stop, or ~~industrial~~ place of business other than oil and gas production (i.e. SIC 1311);

b. the ~~500~~ 300 ppm radius of exposure (ROE) includes any public road.(Steve to check def.inition of public road) ~~as defined in this section.~~

c. the 100 ppm radius of exposure (ROE) is in excess of 3,000 feet.

6. Public Area. A dwelling, place of business, church, school, hospital, school bus stop, government building, a public road, all or any portion of a park, city, town, village, or other similar area that can expect to be populated.

7. Public Road. Any road or highway that is under the jurisdiction of federal, state, county, or municipality for maintenance and public use. (Steve to check)

6. Radius of Exposure. The radius of exposure is an imaginary circle constructed around a point of escape whose radius is calculated using the following Pasquill-Gifford derived equation, or by such other method(s) as may be approved by the Division:

a. For determining the 100 ppm radius of exposure where the hydrogen sulfide concentration in the gaseous mixture is less than 10 percent: $X= [1.589)(\text{hydrogen sulfide concentration})(Q)]^{(0.625)}$, or

0.770

b. For determining the 300 ppm radius of exposure where the hydrogen sulfide concentration in the gaseous mixture is less than 10 percent: $X=[(0.~~4546~~)(\text{hydrogen sulfide concentration})(Q)]^{(0.6258)}$ **(.4546 is for 500 ppm will be corrected for 300 ppm)**

Where: X= radius of exposure in feet: hydrogen sulfide concentration = decimal equivalent of the mole or volume fractions of hydrogen sulfide in the gaseous mixture; Q= maximum volume of gas determined to be available for escape in cubic feet per day (corrected for standard conditions of 14.73 psia and 60°F).

c. For determining the 100 ppm or the 300 ppm radius of exposure in gaseous mixtures containing hydrogen sulfide concentrations of 10 percent or greater, a dispersion technique that takes into account representative wind speed, direction, atmospheric stability, complex terrain, and other dispersion features shall be utilized. Such techniques may include, but shall not be limited to one of a series of computer models outlined in the Environmental Protection Agency's "Guidelines on Air Quality Models (EPA-450/2-78-027R)."

d. Where multiple sources of hydrogen sulfide are present (e.g. wells, treatment equipment, flow lines, etc.), the radius of exposure may encompass a larger area than would otherwise be calculated using a radius of exposure computation for each component part.

e. For a well being drilled in an area where insufficient data exits 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.

~~D. Determination of Hydrogen Sulfide Risk.~~

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

~~a. Testing. Each person, operator or facility to which this Section applies shall test the hydrogen sulfide concentration of the gaseous mixture in well(s), pipelines, tanks, or vessels at least once using a method approved by the Division.~~

~~b. Calculation of Concentration. Using the test results, each person, operator or facility shall determine the hydrogen sulfide concentration of the relevant gaseous mixture.~~

~~c. Notification of the Division. Records of the test and the resulting concentration shall be forwarded to the Division.~~

~~2. Calculation of the Radius of Exposure. If testing determines that the gaseous mixture contains hydrogen sulfide in a concentration of 100 ppm or greater, a calculation of the radius of exposure shall be made and the results submitted to the Division.~~

~~3. Recalculation. If operational or production alterations are made that result in a 5% or greater increase in the hydrogen sulfide concentration or the radius of exposure changes, a new radius of exposure shall be recalculated and the results submitted to the Division and similarly retained.~~

~~4. Time. The testing, determination of the hydrogen sulfide concentration and the calculation of the radius of exposure shall be performed and results submitted to the Division within 180 days of the date of commencement of operations or within 180 days of the effective date of this rule.~~

D. Determination of Hydrogen Sulfide Risk

1. Determination of Hydrogen Sulfide Concentration.

a. Each well, facility, or pipeline operator shall determine the hydrogen sulfide concentration within their operation or system. A representative sample for each system or operation shall suffice provided that the operator can show that the concentration derived is reasonably accurate.

b. Tests shall be conducted in accordance with applicable ASTM and GPA standards or by other methods approved by the Division.

2. Calculation of Radius of Exposure (ROE)

a. If testing described in 1. above determines that the concentration of hydrogen sulfide in a gaseous mixture is 100 ppm or greater, then the operator must calculate the radius of exposures as defined in the definition.

b. The operator shall provide the results of all ROE determinations to the OCD within 180 days of commencing operations or, for existing facilities, within 180 days of the effective date of this rule.

3. Recalculation

If operational or production alterations are made that result in a ~~10%~~ 25% or greater increase in the hydrogen sulfide concentration, a new ROE shall be calculated and the results submitted to the Division and similarly retained.

~~E. Public Contingency Plan.~~

~~1. In General. A Public Contingency Plan is a written plan that provides an organized and effective plan of action to alert and protect persons at risk in the event of a release of a potentially hazardous volume of hydrogen sulfide.~~

~~2. When Required. A Public Contingency Plan must be prepared and maintained at any well, operation, facility or system where a potentially hazardous volume of hydrogen sulfide is present or may be present.~~

~~3. Development. A Public Contingency Plan shall be developed in conjunction with the Division, persons potentially at risk in the event of a release and emergency response authorities (including, but not limited to, police and fire departments near the well, operation or facility, the New Mexico State Police and/or the New Mexico Department of Public Safety, and the Local Emergency Planning Committee).~~

~~4. Contents. A Public Contingency Plan shall, at a minimum, contain the following elements:~~

~~a. Actions to be Taken Upon Release. A Public Contingency plan shall detail actions to be taken to alert and protect persons in the event of a release of a potentially hazardous volume of hydrogen sulfide. A Public Contingency Plan shall include instructions and procedures for alerting persons at risk and emergency response authorities in the event of a release of a potentially hazardous volume of hydrogen sulfide.~~

~~b. Call List . The plan shall include a call list that shall include the following as applicable:~~

~~i. local supervisory personnel;~~
~~ii. county sheriff;~~
~~iii. the Department of Public Safety and State Police;~~
~~iv. city (municipal) police;~~
~~v. ambulance services;~~
~~vi. hospitals;~~
~~vii. county and city fire departments;~~
~~viii. doctors;~~
~~ix. contractors for supplemental or emergency equipment;~~
~~x. the appropriate Division district office; and~~

xi. other public agencies as appropriate.

c. Coordination of Response. A Public Contingency Plan shall stipulate how emergency response actions will be coordinated with the Division and the New Mexico State Police, a Division of the Department of Public Safety, as required pursuant to the New Mexico Emergency Management Act, NMSA 1978, Sections 74-48-1 through 74-4B-14 and the New Mexico Hazardous Material Emergency Response Plan (HMER Plan).

d. Plat or Map.The Plan shall include a plat or map detailing the area of exposure, including the locations of private dwellings or residences, public facilities such as schools, businesses, public roads or other similar areas when any person may be reasonably expected to be present within the radius of exposure.

e. Names and Phone Numbers - Affected Persons. The Plan shall include the names and telephone numbers of all persons living within the radius of exposure of 100 ppm hydrogen sulfide.

f. Names and Phone Numbers - Responsible Persons. The Plan shall include a list of the names and telephone numbers of each responsible party for each of the publicly occupied areas within the radius of exposure, such as schools, churches, businesses and other public areas or facilities within the radius of exposure.

g. Advance Briefing. The Plan shall include provisions for advance briefing of persons within the radius of exposure. Such advance briefing shall include the hazards and characteristics of hydrogen sulfide, the necessity for an Public Contingency Plan, the possible sources of hydrogen sulfide with the radius of exposure, instructions for reporting a gas leak, the manner in which persons will be notified in the event f an emergency, and steps to be taken in an emergency.

h. Additional Support Information. The Plan shall include additional support information, if applicable, such as the location of emergency evacuation routes, the location of safety and life support equipment, the location of hydrogen sulfide containing facilities, the location of nearby telephones and/or other mea s of communication, and special instructions for conditions at a particular installation such as local terrain and the effect of various weather conditions.

i. Site-specific Factors. The Division may impose additional requirements based site-specific conditions, population density or special circumstances.

5. Submission. A copy of a Public Contingency Plan shall be submitted to the Division.

6. Failure to Submit Plan. Failure to submit a Public Contingency Plan when required may result in denial of an Application to Drill, cancellation of an allowable or other appropriate enforcement action.

7. Annual Review. A Public Contingency Plan(s) shall be reviewed on an annual basis and a copy of any necessary revisions shall be submitted to the Division.

8. Retention and On-Site Inspection. A Public Contingency Plan shall be maintained on file at all times and shall be available during a release of a potentially hazardous volume of hydrogen sulfide.

F. Drilling Contingency Plan.

1. In General. A drilling contingency plan is a written plan that describes emergency action to be taken to alert and protect persons at risk in the event of a release of a potentially hazardous volume of hydrogen sulfide, to provide for safety of any person at the site of the release, and to maintain control of the well.

2. When Required. Any drilling, completion or workover operation that is conducted in formations that contain, or that could reasonably be expected to contain a concentration of hydrogen sulfide in the gaseous mixture of 100 ppm or more must complete and file a drilling contingency plan (and a public contingency plan if a potentially hazardous volume of hydrogen sulfide is present). A drilling contingency plan shall be submitted along with the Application for Permit to Drill (APD) (form C-101).

3. Contents of Plan. A drilling contingency plan shall, at a minimum, contain the following elements:

a. Actions to be Taken Upon Release. A Drilling Contingency plan shall detail actions to be taken to alert and protect persons in the event of a release of a potentially hazardous volume of hydrogen sulfide.

b. Call List. The plan shall include a call list that shall include the following as applicable:

i. local supervisory personnel;

ii. county sheriff;

iii. the Department of Public Safety and State Police;

iv. city (municipal) police;

v. ambulance services;

vi. hospitals;

vii. county and city fire departments;

viii. doctors;

ix. contractors for supplemental or emergency equipment;

x. the appropriate Division district office; and

xi. other public agencies as appropriate.

c. Coordination of Response. The Plan shall stipulate how emergency response actions will be coordinated with the Division and the New Mexico State Police, a Division of the Department of Public Safety, as required pursuant to the New Mexico Emergency Management Act, NMSA 1978, Sections 74-48-1 through 74-4B-14 and the New Mexico Hazardous Material Emergency Response Plan (HMER Plan).

d. Plat or Map. The Plan shall include a plat or map detailing the radius of exposure of 100 ppm hydrogen sulfide, including the locations of private dwellings or residences, public facilities such as schools, businesses, public roads or other similar areas when any person may be reasonably expected to be present.

e. Names and Phone Numbers - Affected Persons. The Plan shall include the names and telephone numbers of all persons living within the radius of exposure of 100 ppm hydrogen sulfide.

f. Names and Phone Numbers - Responsible Persons. The Plan shall include a list of the names and telephone numbers of a responsible party for each of the publicly occupied areas within the radius of exposure, such as schools, churches, businesses or other public areas or facilities within the radius of exposure of 100 ppm hydrogen sulfide.

g. Advance Briefing. The Plan shall include provisions for advance briefing of persons within the radius of exposure of 100 ppm hydrogen sulfide. Such advance briefing shall include the hazards and characteristics of hydrogen sulfide, the necessity for an Public Contingency Plan, the possible sources of hydrogen sulfide with the radius of exposure of 100 ppm hydrogen sulfide, 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.

h. Additional Support Information. The Plan shall include additional support information, if applicable, such as the location of emergency evacuation routes, the location of safety and life support equipment, the location of hydrogen sulfide containing facilities, the location of nearby telephones and/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.

i. Site-specific Factors. The Division may require that additional elements be included in the Public Contingency Plan based site-specific conditions, population density or special circumstances. The details may vary according to the conditions or the population potentially at risk. The Division may require that additional safety and engineering control requirements be included in the Public Contingency Plan to provide for public safety.

4. Combined Drilling Contingency Plan and Public Contingency Plan. A combined Drilling Contingency Plan and Public Contingency Plan may be submitted where multiple APD's are filed for a lease, communitization agreement, unit or field.

5. Submission. A copy of a Drilling Contingency Plan shall be submitted to the Division.

6. Failure to Submit Plan. Failure to submit a Drilling Contingency Plan shall result in denial of the Application to Drill.

7. Annual Review. A Drilling Contingency Plan(s) shall be reviewed on an annual basis and a copy of any necessary revisions shall be submitted to the Division.

~~8. Retention and On-Site Inspection. A Drilling Contingency Plan shall be maintained on file at all times and shall be available during a release of a potentially hazardous volume of hydrogen sulfide.~~

E. H_2S Contingency Plans.

1. General. The H_2S Contingency Plan is a written document which provides an organized and effective plan of action to alert and protect persons at risk in the event of a potentially significant release of hydrogen sulfide gas.

2. When Required. An H2S Contingency Plan is required when any new or existing well, operation, facility, area or system generates an H_2S 100 ppm ROE of 3,000 feet from the site of release , or an H_2S 100 ppm ROE encompasses any public area; or an H_2S ~~500~~ 300 ppm ROE encompasses any public road. An H_2S Contingency Plan shall be submitted along with the Application for Permit to Drill (APD) (form C-101) for a well that is not covered by an existing H_2S Contingency Plan.

3. Elements. The H_2S Contingency Plan is a document that provides a tiered response to the risks present. The three possible elements of an H_2S Contingency Plan are the H_2S Release Plan, the Traffic Plan and the Public Contingency Plan.

4. Development. An H_2S Contingency Plan should be developed according to the requirements for each applicable element of the plan. The single H_2S contingency plan should merge the applicable provisions of the requisite elements into a single plan, i.e. there should only be one Map or Plat and one Call List.

5. Contents. The H_2S Contingency Plan shall incorporate the required elements below based on a tiered level of risk:

a. H_2S Release Plan

1. When Required. Required for every H_2S Contingency Plan

2. Development. AN H_2S Release Plan shall be developed by the operator and made available for inspection by the Division, the New Mexico Department of Public Safety, and the LEPC when requested.

3. Contents. AN H_2S Release Plan shall, at a minimum, contain the following provisions:

i. Actions to be Taken Upon Release. The plan shall detail actions to be taken in the event of a release of a potentially hazardous volume of hydrogen sulfide.

ii. Call List . The plan shall include a call list that shall includes the following as applicable:

1. local supervisory personnel;
2. county sheriff;
3 the Department of Public Safety and State Police;
4. city (municipal) police;
5. the appropriate Division district office; and
6. other public agencies as appropriate.

iii. Plat or Map. The plan shall include a plat or map detailing the area within the radius of exposure.

iv. Names and Phone Numbers - Contact Persons. The Plan shall include a list of the names and telephone numbers of all operator personnel to be contacted when a release is reported or suspected. .

b. Traffic Plan.

1. When Required. A Traffic Plan is required where the H_2S ~~500~~ 300 PPM ROE encompasses any public road.

2 Development. A Traffic Plan shall be developed by the operator with due consideration of the relevant issues provided by the Division, the New Mexico State Police and/or the New Mexico Department of Public Safety, county sheriff, city (municipal) police, and the Local Emergency Planning Committee, as required pursuant to the New Mexico Emergency Management Act, NMSA 1978,

Sections 74-48-1 through 744B-14 and the New Mexico Hazardous Materials Emergency Response Plan (HMER Plan).

3. Contents. A Traffic Plan shall, at a minimum, contain the following provisions:

i. Instructions and procedures for alerting and coordination with emergency response authorities in the event of a release of a potentially hazardous volume of hydrogen sulfide that has the potential to affect the public on a public road.

ii. Call List. The plan shall include a call list that shall include the following as applicable:

1. local supervisory personnel;
2. county sheriff;
3 the Department of Public Safety and State Police;
4. city (municipal) police;
5. the appropriate Division district office; and
6. other public agencies as appropriate.

iii. Plat or Map. The Traffic Plan shall include a plat or map detailing the area of exposure, including the locations of public roads within the radius of exposure.

c. Public Contingency Plan (PCP).

1. When Required. A Public Contingency Plan must be prepared and maintained at any well, operation, facility, area or system where the 100 PPM H_2S ROE encompasses a public area..

2. Development. A Public Contingency Plan shall be developed with due consideration of the relevant issues presented by the Division and emergency response authorities (including, but not limited to, police and fire departments near the well, operation or facility, the New Mexico State Police and/or the New Mexico Department of Public Safety, and the Local Emergency Planning Committee).

3. Contents. A Public Contingency Plan shall, at a minimum, contain the following provisions:

i. Actions to be Taken Upon Release. A Public Contingency plan shall detail actions to be taken to alert and protect persons in the event of a release of a potentially hazardous volume of hydrogen sulfide. A Public Contingency Plan shall include instructions and procedures for alerting persons at risk and emergency response authorities in the event of a release of a potentially hazardous volume of hydrogen sulfide.

ii. Call List . The plan shall include a call list that shall include the following as applicable:

1. local supervisory personnel;
2. county sheriff;
3. the Department of Public Safety and State Police;
4. city (municipal) police;
5. ambulance services;
6. hospitals;
7. county and city fire departments;
8. doctors;
9. contractors for supplemental or emergency equipment;
10. the appropriate Division district office; and
11. other public agencies as appropriate.

iii. Coordination of Response. A Public Contingency Plan shall stipulate how emergency response actions will be coordinated with the Division and the New Mexico State Police, a Division of the Department of Public Safety, as required pursuant to the New Mexico

Emergency Management Act, NMSA 1978, Sections 74-48-1 through 74-4B-14 and the New Mexico Hazardous Material Emergency Response Plan (HMER Plan).

iv. Plat or Map. The Plan shall include a plat or map detailing the area of exposure, including the locations of private dwellings or residences, public facilities such as schools, businesses, public roads or other similar areas where the public may be reasonably expected to be present within the radius of exposure.

v. Names and Phone Numbers - Affected Persons. The Plan shall include the names and telephone numbers of all persons living within the radius of exposure of 100 ppm hydrogen sulfide and all responsible parties for each public area, such as churches, schools, and businesses.

vi.. Advance Briefing. The Plan shall include provisions for advance briefing of affected and responsible persons within the radius of exposure. Such advance briefing shall include the hazards and characteristics of hydrogen sulfide, the necessity for an H_2S Contingency Plan, the possible sources of hydrogen sulfide with the radius of exposure, instructions for reporting a gas leak, the manner in which persons will be notified in the event f an emergency, and steps to be taken in an emergency.

vii. Additional Support Information. The Plan shall include additional support information, if applicable, such as the location of emergency evacuation routes, the location of safety and life support equipment, the location of hydrogen sulfide containing facilities, the location of nearby telephones and/or other mea s of communication, and special instructions for conditions at a particular installation such as local terrain and the effect of various weather conditions.

viii. Site-specific Factors. The Division may impose additional requirements or modify requirements based on site-specific conditions, population density or special circumstances.

6. Submission. Where a Public Contingency Plan is required for a new well or facility, the H_2S Contingency Plan shall be submitted to the Division and LEPC. All other Hydrogen Sulfide Contingency Plans shall be maintained by the operator and provided to the Division when requested.

7. Failure to Submit Plan. Failure to submit an H_2S Contingency Plan when required may result in denial of an Application to Drill, cancellation of an allowable or other appropriate enforcement action.

8. Annual Review. H_2S Contingency Plan shall be reviewed on an annual basis or sooner if activation of the plan reveals deficiencies that require correction. The Division shall be notified of any corrections.

9. Retention and On-Site Inspection. AN H_2S Contingency Plan shall be maintained on file at all times and shall be available.

10. Activation Level for Traffic Plan and PCP. The Traffic Plan and Public Plan shall be activated by the operator in the event that a release of a Potentially Hazardous Volume occurs above their respective thresholds (i.e., ~~500~~ 300 ppm ROE for Traffic Plan and 100 ppm ROE for PCP). Or if a sustained concentration of H2S exceeds 50 ppm at the site property line.

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

~~1. Adherence to API Standards. All drilling, completion, workover and well servicing operations shall be conducted in accordance with the publications of the American Petroleum Institute (API) entitled "Recommended Practice for Oil and Gas Well Servicing and Workover Operations Involving Hydrogen Sulfide," RP-68, and "Recommended Practices for Safe Drilling of Wells Containing Hydrogen Sulfide," RP-49, most recent edition.~~

~~2. Additional Standards. At a minimum, and in addition to the foregoing API standards, each drilling, completion, workover and well servicing operation shall also be conducted in accordance with the following:~~

~~a. Before Commencing Operations. A Drilling Contingency Plan and a Public Contingency Plan (if applicable) shall be completed before commencement of operations. In addition, hydrogen sulfide training shall be completed and all related safety equipment and warning systems shall be operational.~~

b. Egress Routes. Egress routes shall be maintained at all times during operations, as follows:

i. Two roads, one at each end of the location or as dictated by prevailing winds and terrain shall be established as emergency egress routes. If a second road is not practical, a clearly marked footpath to a safe area shall be provided.

ii. Egress routes shall be kept passable at all times.

c. Detection and Monitoring. Hydrogen sulfide detection and monitoring equipment shall be provided, as follows:

i. Each drilling and completion site shall have a hydrogen sulfide detection and monitoring system that automatically activates visible and audible alarms when the ambient air concentration of hydrogen sulfide reaches 10 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 monthly. Each test of the hydrogen sulfide monitoring system shall be recorded on the driller's log or its equivalent.

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

d. Wind Indicators and Signs.

i. 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.

ii. Danger or caution sign(s) shall be displayed along all accesses to the site. The sign(s) shall read "DANGER - POISON GAS - HYDROGEN SULFIDE" and in smaller lettering: "Do Not Approach If Red Flag is Flying" or equivalent language approved by the Division. Each sign shall be painted with high visibility red, black and white, or yellow paint with black lettering. The sign(s) 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 300 feet from the well site and at a location which allows vehicles to turn around at a safe distance prior to reaching the site.

iii. When hydrogen sulfide is detected in excess of 10 ppm at any detection point, red flag(s) shall be displayed.

e. If Hydrogen Sulfide Encountered During Operations. If hydrogen sulfide was not anticipated at the time the APD was approved but is encountered during drilling in excess of 100 ppm in the gaseous mixture, the operator shall immediately ensure control of the well, suspend drilling operations (unless detrimental to well control), and obtain materials and safety equipment to bring the operations into compliance with the following paragraphs of this Rule. 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 after discovery.

3. Operating Practices In Hydrogen Sulfide Concentrations of 100 ppm or Greater. Operating practices in areas known to contain a concentration of hydrogen sulfide gas of 100 ppm or greater in the gaseous mixture shall be subject to the following requirements:

a. 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 for aerated mud, 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.

b. Flare System. A flare system shall be designed and installed to safely gather and burn hydrogen sulfide-bearing gas. Flare outlets shall be located as far from the well bore as feasible (but not less than 150 feet from the well). 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.

c. Protection from Sulfur Dioxide.

~~i. Detection Equipment. At any well site where sulfur dioxide may be released as a result of flaring of hydrogen sulfide, the operator shall place sulfur dioxide portable detection equipment and check the sulfur dioxide level in the flare impact area.~~

~~ii. Activation of Public Contingency Plan. If the flare impact area reaches a sustained ambient threshold level of 2 ppm or greater of SO_2 in air and includes any residence, school or church, park, or place of business, road, or any area where any person could reasonably be expected to be present, the Public Contingency Plan shall be activated.~~

~~d. Remote Controlled Choke.~~

~~i. When Required. A remote controlled choke shall be installed during drilling and, where feasible, during completion and well servicing operations conducted within a municipality or within 1/4 mile of the outer boundaries thereof, or when conducted within 1/4 mile of a residence, school, church, park, playground, school bus stop, place of business, road, or any other area where any person could reasonably be expected to be present.~~

~~ii. Remote Controlled Valve. A remote controlled valve may be used in lieu of use of a remote controlled choke, but only for completion operations.~~

~~iii. Remote Controlled Choke, Requirements. A remote controlled choke or remote controlled valve shall have, at a minimum, a pressure and hydrogen sulfide-rated well control choke and kill system including manifold and blowout preventer (hereinafter referred to as "BOP") pursuant to specifications API-16C and API-RP-53. The BOP stack shall have a 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 or other Division Rules, if more stringent.~~

~~e. Mud Program. The mud programs shall adhere to the following minimum requirements:~~

~~i. pH. A pH of 10 or above in a fresh water-base mud system shall be maintained to control corrosion, to insure that hydrogen sulfide gas returns to surface, and to minimize sulfide stress cracking and embrittlement, unless the Division finds that formation conditions or mud types justify a lesser pH level.~~

~~ii. Degassing. Drilling mud containing hydrogen sulfide gas shall be degassed in accordance with current industry standards and practices. Gases shall be piped into the flare system.~~

~~iii. Additives. Sufficient quantities of mud additives shall be maintained on location to scavenge and/or neutralize hydrogen sulfide where formation pressures are unknown.~~

~~iv. Well Testing. Well testing shall be performed with a minimum number of personnel in the immediate vicinity to safely and adequately operate the test equipment. Except with prior approval by the Division, the drill-stem testing shall be conducted only during daylight hours and formation fluids shall not be permitted to flow to the surface (closed chamber only). An operator shall notify the Division 24 hours in advance of a drill-stem test if a Public Contingency Plan is required pursuant to this Rule.~~

~~4. Activation of Drilling Contingency Plan. The Drilling Contingency Plan shall be activated immediately when hydrogen sulfide is detected in excess of 10 ppm at any detection point.~~

F. Protection from Hydrogen Sulfide During Drilling, Workover and Servicing Operations.

1. API Standards. All drilling, completion, workover and well servicing operations shall be conducted with due consideration of the guidelines published by the American Petroleum Institute (API) entitled "Recommended Practice for Oil and Gas Well Servicing and Workover Operations Involving Hydrogen Sulfide," RP-68, and "Recommended Practices for Safe Drilling of Wells Containing Hydrogen Sulfide," RP-49, most recent edition.

2. Minimum Standards. At a minimum, and possibly in addition to the foregoing API standards, each drilling, completion, workover and well servicing operation shall also be conducted in accordance with the following:

a. Before Commencing Operations. A H2S Contingency Plan (where required) shall be completed before commencement of operations. In addition, hydrogen sulfide training shall be completed

~~and~~ as required in sub-section H.(Personnel Protection and Training) including all related safety equipment and warning systems shall be operational.

b. Egress Routes. Passable egress routes shall be maintained at all times during operations.

c. Detection and Monitoring. Hydrogen sulfide detection and monitoring equipment shall be provided (for drilling this can be provided when drilling has reached 500 feet of the zone anticipated to contain hydrogen sulfide) as follows:

i. Each drilling and completion site shall have a hydrogen sulfide detection and monitoring system that automatically activates visible and audible alarms when the ambient air concentration of hydrogen sulfide reaches 10 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 monthly. Each test of the hydrogen sulfide monitoring system shall be recorded on the driller's log or its equivalent.

iii. 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 and/or long-term operations.

d. Wind Indicators and Signs.

i. 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.

ii. Danger or caution sign(s) shall be displayed along all accesses to the site. The sign(s) shall read "DANGER - POISON GAS - HYDROGEN SULFIDE" and in smaller lettering: "Do Not Approach If Red Flag is Flying" or equivalent language approved by the Division. Each sign shall be painted with high visibility red, black and white, or yellow paint with black lettering. The sign(s) 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 300 feet from the well site and at a location which allows vehicles to turn around at a safe distance prior to reaching the site.

iii. When hydrogen sulfide is detected in excess of 10 ppm at any detection point, red flag(s) shall be displayed.

e. If Hydrogen Sulfide Encountered During Operations. If hydrogen sulfide was not anticipated at the time the APD was approved but is encountered during drilling in excess of 100 ppm in the gaseous mixture, the operator shall immediately ensure control of the well, suspend drilling operations (unless detrimental to well control), and obtain materials and safety equipment to bring the operations into compliance with this Rule. 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 after discovery.

3. Operating Practices In Hydrogen Sulfide Concentrations of 100 ppm or Greater. Operating practices in areas known to contain a concentration of hydrogen sulfide gas of 100 ppm or greater in the gaseous mixture shall be subject to the following requirements:

a. 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 for aerated mud, 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.

b. Flare System. For drilling and completion operations, a flare system shall be ~~considered and~~ installed, unless exempted by the division, ~~where feasible~~ to safely gather and burn hydrogen sulfide-bearing gas. Flare outlets shall be located as far from the well bore as feasible (but not less than 150 feet from the well). 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.

c. Remote Controlled Choke.

i. When Required. A remote controlled choke shall be ~~be considered and~~ installed ~~when feasible~~ during drilling and during completion and well servicing operations when the 100 PPM H2S ROE impacts a public area.~~,~~, unless exempted by the division.

ii. Remote Controlled Valve. A remote controlled valve may be used in lieu of use of a remote controlled choke, but only for completion operations.

iii. Remote Controlled Choke Requirements. A remote controlled choke or remote controlled valve shall have, at a minimum, a pressure and hydrogen sulfide-rated well control choke and kill system including manifold and blowout preventer (hereinafter referred to as "BOP") pursuant to specifications API-16C and API-RP 53. ~~Where feasible~~ Tthe BOP stack shall have a 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 or other Division Rules, if more stringent. Variations to BOP stack arrangements may be granted by the Division for a good cause shown.

d. Mud Program. A mud program, including de-gassing and flaring, capable of handling H2S conditions and well control shall be utilized.

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

~~1. Adherence to American Petroleum Institute (API) Standards. Operations at producing wells, tank batteries and associated production facilities shall be conducted in accordance with American Petroleum Institute (API) publication entitled "Recommended Practices for Oil and Gas Producing and Gas Processing Plant Operations Involving Hydrogen Sulfide," RP-55, latest edition.~~

~~2. Additional Standards. At a minimum, and in addition to the foregoing API standards, production from wells, operation of tank batteries and associated production equipment shall also be conducted in accordance with the following:~~

~~a. Gaseous Mixtures Containing 100 ppm or more. Producing wells containing 100 ppm or more of hydrogen sulfide in the gaseous mixture, tank batteries and associated production facilities at such sites, shall be subject to the following:~~

~~i. Public Contingency Plan. A determination must be made of the radius of exposure pursuant to this Rule and, if required based on the calculated radius of exposure, a Public Contingency Plan will also be required.~~

~~ii. Signage. A danger sign or signs shall be posted within 50 feet of each facility to alert the public of the potential hydrogen sulfide danger. If fenced, a danger sign at the gate(s) shall suffice. Danger signs shall be posted at each flowline and gathering line that contains hydrogen sulfide gas as specified in Subparagraph. A sign shall be placed at each point where such a line crosses a public road or lease road. Each sign shall be legible and shall contain the name of the owner or operator and an emergency telephone number.~~

~~iii. Fencing. Fencing and gate(s) shall be required when producing wells, associated tank batteries and associated production facilities are located within a municipality, within 1/4 mile of the outside boundary of a municipality or within 1/4 mile of a residence, school, church, park, playground, school bus stop, place of business, roads, or where any person could reasonably be expected to be present. The Division shall approve the method and type of fencing. Gate(s) shall be locked when unattended by the operator.~~

~~iv. Wind Direction Indicators. Wind direction indicator(s) shall be required. In the event the producing well and associated tank battery is located at the same site, one such indicator shall suffice.~~

~~v. Secondary Well Control. All wells shall possess a secondary means of immediate well control through the use of appropriate Christmas tree and/or downhole completion equipment. Such equipment shall allow downhole accessibility (reentry) under pressure for permanent well control operations. If a potentially hazardous volume exists, well head configuration shall be in accordance with API specifications and at least two entry points provided in the casing/tubing annulus.~~

~~vi. Automatic Safety Valve or Shutdown. If a potentially hazardous volume exists, an automatic safety valve or shutdown shall be installed at the wellhead or other appropriate shut-in control shall be installed. The automatic safety valve shall be set to activate upon a release of a potentially hazardous volume of hydrogen sulfide.~~

~~b. Gaseous Mixtures Containing 300 ppm or More. Tank or vessels Producing wells containing 300 ppm or more of hydrogen sulfide in the gaseous mixture shall be subject to the following additional requirements:~~

~~i. Each stair or ladder leading to the top of any storage tank shall be chained and/or marked to restrict entry. For any tank battery that requires fencing pursuant to this Section, a danger sign posted at the gate(s) may be substituted for chaining and signage.~~

~~ii. A danger sign 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. Each sign shall read: "DANGER: POISON GAS HYDROGEN SULFIDE."~~

~~iii. At least one permanent wind direction indicator shall be installed so that wind direction can be easily determined at or approaching the storage tank(s).~~

~~iv. Each tank battery shall be enclosed with a Division-approved fence to restrict access when located within a municipality or within 1/4 mile of the outer boundaries of a municipality, or within 1/4 mile of a residence, school, church, park, playground, school bus stop, place of business, or an area where any person could reasonably be expected to be present. Gates shall be locked when unattended.~~

~~3. Modification or Repair. The Division may require modification or repair of a producing well, associated tank battery or associated production facilities if the sustained ambient concentration of hydrogen sulfide is 1 ppm or greater at any residence, school, church, park, playground, school bus stop, place of business, or area where any person could reasonably be expected to present.~~

~~4. Compliance Schedule. Each existing producing well and associated tank battery not currently meeting the requirements and minimum standards set forth herein shall be brought into compliance within one (1) year of the effective date of this Rule. Each producing well and tank battery constructed following the effective date of this Rule shall be designed, constructed and operated to meet the requirements set forth herein.~~

G. Protection from Hydrogen Sulfide at Producing Wells, Tank Batteries and Associated Production Facilities, Refineries, Gas Plants, and Compressor Stations.

1.American Petroleum Institute (API) Standards. Operations at producing wells, tank batteries and associated production facilities shall considered the guidelines published by the American Petroleum Institute (API) 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, and possibly in addition to the foregoing API standards, production from wells, operation of tank batteries and associated production equipment shall also be conducted in accordance with the following:

a. Gaseous Mixtures Containing 100 ppm or more. Producing wells containing 100 ppm or more of hydrogen sulfide in the gaseous mixture, tank batteries and associated production facilities at such sites, shall be subject to the following:

i. H2S Contingency Plan. A determination must be made of the radius of exposure pursuant to this Rule and, if required based on the calculated radius of exposure, a H2S Contingency Plan will also be required.

ii. Signage. A danger sign or signs shall be posted within 50 feet of each facility to alert the public of the potential hydrogen sulfide danger. If fenced, a danger sign at the gate(s) shall suffice. Danger signs shall be posted at each flow line and gathering line on the well pad that contains hydrogen sulfide gas as specified in Subparagraph. A sign shall be placed at each point where such a 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.

iii. Fencing. Fencing and gate(s) shall be required when producing wells,

associated tank batteries and associated production facilities are located within a ~~municipality, or within~~ 1/4 mile of a residence, school, church, park, playground, school bus stop, or place of business. The fence shall consisting of a 5 foot chain link topped by two stands of barbed wire or other methods approved by the Division. ~~equivalent~~. Gate(s) shall be locked when unattended by the operator.

iv. Wind Direction Indicators. Wind direction indicator(s) shall be required at every facility (tank battery, water injection station, production satellite) where H2S concentration in a gaseous state exceeds 100 PPM. .

v. Secondary Well Control. Wells where the 100 PPM H2S ROE incorporates a public area shall possess a secondary means of immediate well control through the use of appropriate Christmas tree and/or downhole completion equipment. Such equipment shall allow downhole accessibility (reentry) under pressure for permanent well control operations.

vi. Automatic Safety Valve or Shutdown. If the 100 PPM ROE involves a public area ~~or the 500 PPM ROE involves a public road~~, an automatic safety valve or shutdown shall be installed at the facility or wellhead or other appropriate shut-in control shall be installed. The automatic safety valve shall be set to activate upon a release of a potentially hazardous volume of hydrogen sulfide.

b. ~~vii.~~ Tanks or vessels containing ~~100~~ 300 ppm or more of hydrogen sulfide in the gaseous mixture shall be subject to the following additional requirements:

~~1.~~ Each stair or ladder leading to the top of any storage tank shall be chained and/or marked to restrict entry. For any tank battery that requires fencing pursuant to this Section, a danger sign posted at the gate(s) may be substituted for chaining and signage.

~~2.~~ A danger sign 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. Each sign shall read: "DANGER: POISON GAS HYDROGEN SULFIDE."

3. ~~3.~~ Modification or Repair. The Division may require modification or repair of a producing well, associated tank battery or associated production facilities if the sustained ambient concentration of hydrogen sulfide is 1 ppm or greater at any public area .

4. ~~4.~~ Compliance Schedule. Each existing producing well and associated tank battery not currently meeting the requirements and minimum standards set forth herein shall be brought into compliance within one (1) year of the effective date of this Rule. Each producing well and tank battery constructed following the effective date of this Rule shall be designed, constructed and operated to meet the requirements set forth herein.

~~I. Personnel Protection and Training. Any person working at a facility for which a Public Contingency Plan or a Drilling Contingency Plan is required to be submitted pursuant to this Section shall be trained in hydrogen sulfide hazards, detection and contingency procedures, and shall be provided with adequate protective equipment. Records of such training shall be retained and shall be made available to the Division upon request.~~

H. Personnel Protection and Training.

Any authorized person working at a facility for which the H_2S content is 100 ppm or greater, shall provide training in hydrogen sulfide hazards, detection, and contingency procedures. Additionally, authorized personnel shall be provided with adequate personal protective equipment.

Any visitor at a facility for which the H_2S content is 100 ppm or greater shall be instructed in the applicable warning signals provided for that location and the appropriate emergency response they should take.

~~J. Standards for Equipment That May Be Exposed to Hydrogen Sulfide.~~

~~1. Metallurgical Equipment. All metallurgical equipment that may be exposed to hydrogen sulfide shall be suitable for hydrogen sulfide service. The metallurgical properties of the materials used shall conform to the current National Association of Corrosion Engineers (NACE) Standard MR 0175-90, Material Requirement, Sulfide Stress Cracking Resistant Metallic Material for Oil Field Equipment.~~

~~2. Other Equipment. Elastomers, packing, and similar inner parts exposed to hydrogen sulfide shall be resistant at the maximum anticipated temperature of exposure. The manufacturer's verification of design for use in an environment containing hydrogen sulfide shall be sufficient verification of suitable service in accordance with this Section. If applicable, adequate protection by chemical inhibition or other such method that controls or limits the corrosive effects of hydrogen sulfide shall be used.~~

I. Standards for Equipment That May Be Exposed to Hydrogen Sulfide. Proper materials and/or appropriate protective measures for hydrogen sulfide shall be utilized. Records shall be retained and shall be made available to the Division upon request. The Division may require additional requirements on any facility that may pose a threat to public health and/or the environment.

~~K.~~J. Hydrogen Sulfide Injection ~~Prohibited~~. Injection of fluids containing hydrogen sulfide ~~is prohibited~~ where the injection fluids are a gaseous mixture, or would be a gaseous mixture in the event of a release to the atmosphere, and where the 100 ppm radius of exposure includes any public area , excluding public roads, ~~residence, school, church, park, school bus stop, place of business, an area where any person could reasonably be expected to be present, within a municipality, or within 1/4 mile of the outer boundary of a municipality unless permitted through public hearing.~~ shall not be allowed unless first approved by the division after public hearing.

~~L.~~K. Exemptions. An exemption to the requirements of this Section may be granted by petitioning the Director. Any such petition shall provide specific information as to the circumstances that warrant approval of the variance requested and the proposed alternative methods by which the related requirements of this Section are to be satisfied. The Director, after considering all relevant factors, may approve an exemption if it is determined that the proposed alternative meets or exceeds the requirements of this Section and otherwise protects the health, safety and welfare of potentially affected persons.

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

~~1. Activation of the Public Contingency Plan or the Drilling Contingency Plan, or Both. The Public Contingency Plan or the Drilling Contingency Plan, or both, shall be activated immediately upon release of a potentially hazardous volume of hydrogen sulfide or if any person is subjected to an atmosphere exposure exceeding 30 ppm of hydrogen sulfide or 10 ppm of sulfur dioxide.~~

~~2. Notification of the Division. Upon release of a potentially hazardous volume of hydrogen sulfide, or, alternatively, upon exposure of any person to an atmosphere exposure exceeding 30 ppm of hydrogen sulfide or 2 ppm of sulfur dioxide, the Division shall be notified as soon as practicable, but no later than within one hour of the discovery of the release. A full report of the incident shall be submitted to the OCD on a C-141 form no later than fifteen (15) days following the incident.~~

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

1. Activation of the H2S Contingency Plan. The H2S Contingency Plan shall be activated immediately upon a H2S release if there is potential to expose any public area to 100 PPM H2S or a potential to expose a public road to a ~~500~~ 300 PPM H2S. ., or a potential exposure of H2S 100 PPM ROE of 3000'or greater,~~.~~ Or if a sustained concentration of H2S exceeds 50 ppm at the site property line.

2. Notification of the Division. Upon release of a hydrogen sulfide requiring activation of the H2S Contingency Plan, required above, , the Division shall be notified as soon as practicable, preferably within one hour of the discovery of the release or as soon as possible recognizing that prompt response should supercede notification. A full report of the incident shall be submitted to the OCD on a C-141 form no later than fifteen (15) days following the incident.

~~N.~~M. ~~Minimum~~ Additional Standards. The Division may require more stringent standards on a case-by-case basis than those set forth in this Section, or require corrective actions if necessary, to maintain control of a well or any other facility, or to safeguard public health or safety.

19.15.2.52 Hydrogen Sulfide Gas (Hydrogen Sulfide)

~~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~~A. Applicability. This section is a public safety standard that 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 or facility engaged in gathering, transporting, storing, processing or refining of crude oil, natural gas or carbon dioxide. 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.

~~C~~B. 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. ~~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.
   a) For existing gas operations and facilities, t~~T~~he escape rate is calculated using the maximum daily rate of the gaseous mixture produced, 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 gas operations and facilities, the escape rate will 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 off set wells, or the field average of current maximum open-flow rates.
   c) For an oil well, the escape rate shall be calculated by multiplying the producing gas/oil ratio by the maximum daily production rate or the best estimate thereof. ~~For an oil or natural gas well drilled in a developed area, the escape rate may be determined by using data from offset wells completed in the interval in question, or using some other reasonable means to calculate the escape rate. For facilities or operations not mentioned, the escape rate shall be calculated using the actual flow of the gaseous mixture through the facility or operation~~.
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"~~ PHV) 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 is ~~equal to or~~ in excess of 3,000 feet.

12. Public Area. A "public area" is any occupied ~~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, school bus stop, hospital, or government building, or any portion of a park, city, town, village or ~~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.

~~D~~C. ~~Determination of Hydrogen Sulfide Risk~~Testing for Hydrogen Sulfide.

1. Determination of Hydrogen Sulfide Concentration.

a. Each person, operator or facility to which this section applies shall determine the hydrogen sulfide concentration within each of its ~~wells,~~ operations or systems. A representative sample or process knowledge may be used in lieu of individual testing of ~~wells,~~ operations or 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,~~ operation or 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 valid, representative sample from an ~~well,~~ operation or system was tested at any time prior to the effective date of this section, ~~within one (1) year of the effective date of this section,~~ 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~~.

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

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

~~a.~~ If the concentration of hydrogen sulfide in a given ~~well,~~ operation or system is 100 ppm or greater, then the person, operator or facility must calculate the radius of exposure pursuant to ~~this section~~Paragraph D and comply with the signage requirements outlined in paragraph F.

~~4~~. Retesting. If any change or alteration to an operation or system can materially increase the concentration of hydrogen sulfide, then the operator must retest that operation or system.

D. Determination of Radius of Exposure

1. For all operations subject to this section, the radius of exposure (ROE) shall be determined by following the definition given in B.14.

~~b~~2. 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 to the division.

~~3.~~ For an ~~well~~, operation or system existing on the effective date of this section, the determination, calculation and submission required herein shall be accomplished within ~~180~~360 days of the effective date of this section; for any ~~well,~~ operation or system that commences operations after the effective date of this section, the determination, calculation and submission required herein shall be accomplished, preferably before operatons begin but no later than ~~-~~60 days after initial production~~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 an ~~well,~~ operation or system to increase to 100 ppm or greater or, if the hydrogen sulfide concentration in a well, operation or system was already 100 ppm or greater, 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 to the division ~~within thirty (30) days~~as soon as possible, but no later than sixty (60) days.

Bruce: only when produce a well after frac'ing can you determine actual concentration

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 that could produce a PHV. The hydrogen sulfide contingency plan should be developed with due consideration of API Standard RP-55 entitled "Recommended Practices for Oil and Gas Producing and Gas Processing Plant Operations Involving Hydrogen Sulfide" but, as a minimum ,must be developed in accordance with the following paragraphs.

Steve: need to have good data to do an ROE calculation

2. When Required. A hydrogen sulfide contingency plan must be prepared whenever a potentially hazardous volume of hydrogen sulfide is present or , in the case of a well being drilled, deepened, or re-entered, may reasonably 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.~~

3. Plan Contents ~~4. Elements~~.

The contingency plans shall contain, but not be limited to, information on the following subjects, as appropriate for the operation or system to which it applies:

a. Emergency Procedures
   1. Responsibilities of personnel
   2. Immediate Action plan
   3. Telephone numbers and communication methods for public agencies, emergency response organizations, and public authorities as appropriate
   4. Locations of nearby residences, businesses, parks, schools, churches, roads, medical facilties, etc.
   5. Evacuation routes and road block locations
   6. Procedures for public notification (lists or reaction plans)

b. Characteristics of Hydrogen Sulfide and Sulfur Dioxide

c. Maps, and Drawings
   1. Plats or maps detailing the areas affected by the ROE, specifically delineating any affected public areas and public roads

d. Training and Drills
   1. Responsibilities and duties of essential personnel
   2. On-site or classroom drills
   3. Informing nearby residents on protective measures in emergency situations as appropriate
   4. Training and attendance documentation
   5. Briefing of public officials on issues such as evacuation or shelter-in-place plans

4. Plan Activation. The hydrogen sulfide contingency plan shall be activated in the event of a significan release of hydrogen sulfide gas that could produce a PHV.

~~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 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;~~

~~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. 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. A hydrogen sulfide contingency plan for a well, system or operation existing on the effective date of this section shall be submitted to the Division within 180360 days from the effective date of this section. A hydrogen sulfide contingency plan for a new well, system or operation shall be submitted, preferable before operations begin, but no later than 60 days of commencing before operations commence. A hydrogen sulfide contingency plan shall be submitted within 180 days if a public area or public road is established that creates a potentially hazardous volume where none previously existed. The hydrogen sulfide

~~contingency plan~~ ~~f~~For a drilling, completion, workover or well servicing operation, the hydrogen sulfide contingency plan must be on-file with the division prior to commencing work. The plan may be submitted separately or along with the application for permit to drill (APD) or must be on-file from a previous submittal.

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 or other appropriate enforcement action.

7. ~~Annual Review, Amendment~~Updating Provisions. The ~~person, operator or facility shall review the hydrogen sulfide contingency plan 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~~Contingency Plan shall be periodically reviewed and updated any time its provisions or coverage materially change.

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.

F. 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. Where required. For every operation, or system to which this section applies that is determined to contain a hydrogen sulfide concentration of 100 ppm or greater, signs or markers meeting the requirements outlined below must be installed and maintained.
2. Signs and Markers Specifications. The sign or marker shall contain sufficient information and be readily readable by the public to warn that a potential danger exists and shall contain the words "Poison Gas". Signs or markers that have been installed prior to the effective date of this section and that are in compliance with other applicable regulations (Department of Transportation, OSHA, etc.) shall satisfy the requirements of this section. Other signs and markers that have been installed prior to the effective date of this section shall be acceptable provided that they indicate the presence of a potential hazard. For drilling, workover, completion, and recompletion operations, additional warning measures (e.g., red flags, signs, etc) shall be prominently posted whenever an imminent danger situation exists.

3. Location. Signs and/or markers shall be prominently posted at appropriate locations (e.g., entrance points) for facilites and operations subject to this section.

~~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. Compliance Requirements

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

a. 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 edition.

~~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.~~

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

i. Each drilling and completion site shall have an accurate hydrogen sulfide detection and monitoring system that is capable of automatically activatesing visible and audible alarms when the ambient air concentration of hydrogen sulfide ~~reaches~~is equal to or less than 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.~~

~~iiii~~. 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.

~~iviii~~. 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.

c. Wind Indicators.

i. 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.

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

d. Special Requirements. Where drilling, workover, completion, and recompletion operations occur in areas where the 100 ppm ROE includes a public area, the following additional measures are required:

i. The operator shall install a choke manifold, mud-gas separator, and flare line and provide a suitable method for lighting the flare.

ii. A remote controlled choke and accumulator shall be installed and operational.

~~e. Flare System. For drilling and completion operations, 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.~~

~~f. Use of Well Control Equipment.~~

~~i. Drilling. A remote controlled 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 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.~~

~~ii. Completion, Workover and Well Servicing. 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.~~

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

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

~~3. 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 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.~~

~~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.~~

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

okay w/ NMOGA to make this 100 ppm

a. 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.~~

b. Security Provisions~~Fencing. 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~~Well sites or other unattended fixed surface facilities shall be protected from public access when the location is within ¼ mile of a public area. This provision shall be provided by fencing and locking, as appropriate. A surface pipeline shall not be considered as a fixed surface facility for this section.

c. Wind Direction Indicators. ~~Wind direction indicators shall be required.~~ 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

d. Special Requirements. For operations or systems occur in areas where the 100 ppm ROE includes a public area, the following additional measures are required:

i. Operators shall install safety devices and maintain them in an operable condition or shall establish safety procedures designed to prevent the undetected continuing escape of hydrogen sulfide.

ii. 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 the downhole accessibility (reentry) under pressure for permanent well control.

~~e. Secondary Well Control. 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. 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.~~

e. 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.~~

f. Compliance Schedule. Each existing crude oil pump station and producing well, tank battery and associated production facility, refinery, gas plant and compressor station not currently meeting the requirements 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.

3. 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. Persons, operators and facilities shall choose equipment with consideration for both the hydrogen sulfide working environment and anticipated stresses. NACE Standard MR0175 (latest edition) or some other standard approved by the division shall be used for selection of metallic equipment or, if applicable, adequate protection by chemical inhibition or other methods that control or limits the corrosive effects of hydrogen sulfide shall be used.~~

~~K. Exemptions. Any person, operator or facility may petition the director 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, 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.~~

4. 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, 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.~~

H. Reciprocity. Any facility or operation, that is subject to another jurisdiction with respect to hydrogen sulfide regulations (e.g., Bureau of Land Management Onshore Order 6) and is in compliance with those regulations, shall be deemed in compliance with this 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.~~

I. Exemptions. Any person, operator or facility may petition the director, or the directors 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 directors designee, after considering all relevant factors, may approve an exemption if the circumstances warrant an exemption.