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STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION FOR THE PURPOSE OF CONSIDERING:

APPLICATION OF THE NEW MEXICO OIL CONSERVATION DIVISION, THROUGH THE ENVIRONMENTAL BUREAU CHIEF, FOR THE ADOPTION OF AMENDMNETS TO DIVISION RULE 118 (HYDROGEN SULFIDE GAS)

CASE NO. 12897

ORDER NO. R-

ORDER OF THE OIL CONSERVATION COMMISSION

BY THE COMMISSION:

THIS MATTER came before the Oil Conservation Commission (hereinafter referred to as "the Commission") on July 19, August 30, September 20 and September 27, 2002, at Santa Fe, New Mexico, on application of the New Mexico Oil Conservation Division, through the Chief of the Environmental Bureau (hereinafter referred to as "the Division"), and the Commission, having carefully considered the evidence, the pleadings and other materials submitted by the parties hereto, now, on this 27th day of September, 2002,

FINDS,

1. In this rule-making proceeding, the Division has applied for repeal of existing Rule 118 of the Rules and Regulations of the Oil Conservation Division, <> NMAC <>, and for adoption of a replacement rule, to be codified in the New Mexico Administrative Code as <> NMAC <>, concerning protection of the public health and safety from the hazards associated with hydrogen sulfide gas during activities regulated by this body and the Oil Conservation Division.

<> Since the application was filed in this case on ____, 2002, two public hearings have been conducted, one on July 19, 2002 and a second on September 20, 2002. The Commission has deliberated on the application in open session during its meetings of August 30 and September 27 2002. And the Commission accepted written comments

concerning the proposed rulemaking following the first hearing and accepted written comments prior to the second hearing.

<>. The application of the Oil Conservation Division was was the culmination of an approximately two year process wherein the provisions of existing Rule 118 were examined. In winter of 2000-01, the Director of the Division directed the Environmental Bureau to review the rule and determine whether the rule was adequately protective of public safety. The Environmental Bureau subsequently gathered information from other governmental agencies and the American Petroleum Institute and <ASTN>. After comparing the information received to Rule 118 and conducting its own technical inquiries, the Bureau concluded that Rule 118 was not adequately protecive of the public health and safety and in fact had serious flaws.

<> For example, the Bureau noted that present Rule 118 exempts facilities that process a volume fraction of hydrogen sulfide gas that is less than 10 mcf per day, regardless of the actual concentration of gas that might result if a release were to occur. Thus, if a given facility handled 9.9 mcf of pure hydrogen sulfide each day, the facility would be exempt from regulation notwithstanding the fact that a release from such a facility could produce a lethal concentration of hydrogen sulfide gas. A facility that handles just less than 1,000 mcf per day of a gaseous mixture that consists of one percent hydrogen sulfide gas would also be exempt, notwithstanding the fact that a release of the gaseous mixture could produce a radius of exposure of 55 parts per million of hydrogen sulfide gas at 200 feet and one hundred parts per million at four hundred-fifty feet. **While this was portrayed as a worst-case scenario, it highlights a serious deficiency in the present Rule 118. <move?>**

<> The Bureau also noted that the existing Rule 118 exempts from regulation tanks that may contain a concentration of hydrogen sulfide gas up to 1000 parts per million and certain other facilities that may contain a concentration of hydrogen sulfide gas up to 500 parts per million. The Bureau noted that these facilities are not required to operate according to any standards, are not required to have certain safety devices or procedures, no signs, no fencing and no contingency plans.

<> Finally, the Bureau noted that the Rule 118 does not require facilities containing hydrogen sulfide gas to have safety devices or safety procedures, and the standards that are referenced are advisory standards enforcement of which could be problematic.

<> Having found that the current regulatory scheme was inadequate and not protective of the public safety, the Bureau set out to develop a new regulatory scheme. To develop new standards, the Environmental Bureau conducted air-dispersion models to determine how hydrogen sulfide gas disperses in air following an accidental release. Mathematical models attempt to predict the probability of exposure to a given concentration of hydrogen sulfide gas at selected distances from a hypothetical point of release. As hydrogen sulfide moves away from the point of release, its concentration decreases as it disperses and the mathematical models seek to define the concentrations at

a certain distance. Several mathematical models are available. The Environmental Bureau chose the Pasquill-Gifford equation, an equation derived from the Gaussian distribution plume model and assumes a continuous source. While it tends in some cases to overstate the consequences of a release, this serves to better protect public safety. Most states and the federal government use a steady state model like Pasquill-Gifford. (The proposed rule the Bureau has developed permits an operator to use another mathematical model so long as the Bureau permits use of the particular model.) The equation, through a coefficient, takes into account environmental factors and weather, and the mathematical experiments conducted by the Bureau used climatological data specific to New Mexico.

<> The Environmental Bureau conducted peer review of its results by a registered New Mexico engineer who is a member of the Environmental Bureau but who had not been involved in the hydrogen sulfide investigation previously.

<> After having identified how hydrogen sulfide gas behaves when released, the Bureau set out to develop a regulatory scheme that would protect the public health from releases. A critical feature of the scheme that was chosen is the concept of the "radius of exposure." The radius of exposure uses the results from the mathematical model to describe a distance from a hypothetical release where certain regulatory requirements designed to be protective of public safety should attach. The radius of exposure in turn describes a circular area around the theoretical point of release which describes the theoretical area of exposure.

<> Then the Bureau set out to determine how to describe the distance from a theoretical release that relevant regulatory requirements should attach. The Bureau decided to define a potentially hazardous volume created by a release as an anchor point. This concept (also used by other states and federal government) defines a potentially hazardous volume as a concentration of one hundred parts per million in any public area, five hundred parts per million at any public road or one hundred parts per million three thousand feet form the release point. With that information, a map can be drawn around a point of release that details the various levels of exposure at certain distances. Using the mathematical model, the concentration of the hydrogen sulfide gas in the operation or system and the gas flow, the distance that a 100 ppm and a 500 ppm release could theoretically travel can be calculated and imaginary circles can be drawn on a map designating the area potentially impacted by a potentially hazardous. Thus, the Division, the Bureau and the operator will know who is potentially affected by such a release, who needs to be protected form releases, who needs to be warned, and who needs to be evacuated in the event of a release.

<> The Environmental Bureau created a work group composed industry technical personnel, the New Mexico Oil and Gas Association, the Independent Producers Association of New Mexico, public representatives, other governmental agencies (including the Bureau of Land Management, and local emergency planning committees of several counties), the New Mexico Department of Public Safety and members of the

Environmental Bureau. The work group was charged with reviewing a draft rule prepared by the Bureau and making recommendations.

<> The work group met numerous times, and finally issued a consensus draft of a proposed replacement for Rule 118, which was attached to the Division's application in this case. Prior to the first hearing in this matter, the Division proposed changes to the draft, and a redline/strikeout version of the rule attached to the application was presented to the Commission during the hearing. This document was accepted into evidence during the hearing as the Division's Exhibit 1. Some of the changes were made to correct typographical errors, and other changes were more substantive in nature. During the subsequent comment period, the Environmental Bureau revised many paragraphs of Exhibit 1 in response to comments received and in response to questions raised during the July <> hearing. Many proposals for specific revisions to specific paragraphs were made in the form of written comments as well.

<> Because it was now unclear which iteration would be considered and because of the very real potential for confusion, the Chair and Commission counsel attempted to combine in a single draft the Division's proposed changes; during that process, they attempted to address some of the concerns raised by persons submitting comments. During its meeting of August 30, 2002, the Commission requested that input on the revised draft be obtained. **The Commission has therefore re-opened the record of this proceeding and scheduled a public hearing and work session on the proposed rulemaking on September 20, 2002. The Commission elected to receive** written comments until September 18, 2002.

<> The Commission specifically invited further comment on the protective measures to be applied in remote areas where a potentially hazardous volume (defined in the proposed regulation) is not present, but where hydrogen sulfide exists in volumes of 100 ppm or more in the gaseous mixture. The draft attached to this letter requires all such facilities to have signage; no additional requirements are imposed on such facilities unless a potentially hazardous volume is present. Second, the Commission would like input concerning the extent to which the rule applies or should apply to pipelines, particularly gathering systems. No mention of pipelines is made in this draft (or any other draft). Third, the Commission would like input concerning the extent to which the rule applies or should apply to facilities permitted under Rule 711. Language clarifying this matter was proposed by the Division, and was further clarified in this draft. Fourth, the Commission would like input on the area of well control during drilling, workover, completion and re-completion and well servicing. The attached draft imposes rigorous requirements for well control during drilling but includes somewhat relaxed requirements for workover and well servicing operations. Finally, references were made in the Division's draft to "safety equipment," but no safety equipment was specified and all such references were deleted for this reason; the Commission would like input on whether additional safety equipment should be required and, if so, when.

<> A copy of the draft prepared by the Chair and Commission counsel is attached. The changes from the Division's first draft are clearly shown (additions are underlined and deletions are struck through).

Please feel free to comment on these or any other aspects of this draft that you care to. Thank you in advance for your input.

<> Hydrogen sulfide is an extremely toxic gas which is encountered in the drilling and production of oil and natural gas. It is also a common gas, produced whenever decomposition occurs in the absence of oxygen. Proteins produced during decomposition contain sulfur <>.

The gas is so toxic, exposure of a concentration of between 350 to 500 parts per million for four to eight hours can cause death. Exposure to a concentration of hydrogen sulfide of a concentration of 600-1500 parts per million for two minutes of less can cause death. This extreme toxicity may help explain why exposure to hydrogen sulfide gas is the leading cause of sudden death in the workplace, according to the Centers for Disease Control, the National Institute for Occupational Safety and Health.

<> While hydrogen sulfide is the most odiforous substances that exist (it emits an odor like rotten eggs), exposure to concentrations of the gas around 100 parts per million may deaden the sense of smell so that it cannot be detected.

<> The effects to exposure ot hydrogen sulfide in smaller amounts depended on the concentration exposed to and the duration of the exposure. For example, exposure to fifty parts per million for a few minutes will induce a very severe headache and the person exposed will have difficulty breathing and thinking. Exposure to one hundred parts per million for a few minutes will induce more severe respiratory difficulties; regulations of the Occupational Health and Safety Administration require immediate workplace evacuation if concentrations reach this level. Exposure to a level of five hundred parts per million for a few minutes induces unconsciousness. The effects vary from person to person, as Division Exhibit 3 demonstrates.

<> The general methodology adopted by the Enviornmental Bureau was to look at standards applied in the workplace on the theory that if workers are not protected form hydrogen sulfide, then the public may not be protected either, although the Bureau emphasized that the proposed rule is not to be worker safety rule. Also, as the workers are the persons who will contain any release of hydrogen sulfide, the Division reasoned that protection of the workers would also ensure that any situation was controlled, thus lessening the possibility of public <>.

IT IS THEREFORE ORDERED:

1. Jurisdiction of this case is retained for the entry of such further orders as may be necessary given subsequent proceedings in TMBR/Sharp Drilling, Inc. v. David H. Arrington Oil & Gas, Inc., *et al.*

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

LORI WROTENBERY, CHAIR

JAMI BAILEY, MEMBER

ROBERT LEE, MEMBER

SEAL

50 ppm - PEL (132)(2) (149)(2)

100 ppm IS the IDLH (145)(2)

11-18

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION FOR THE PURPOSE OF CONSIDERING:

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CASE NO. 12897

ORDER NO. R-11847

ORDER OF THE OIL CONSERVATION COMMISSION

BY THE COMMISSION:

~~a rulemaking proceeding,~~

THIS MATTER, came before the Oil Conservation Commission (hereinafter referred to as "the Commission") on July 19, August 30, September 20, September 27, and _____, 2002, at Santa Fe, New Mexico, on application of the New Mexico Oil Conservation Division through the Chief of the Environmental Bureau (hereinafter referred to as "the Division"), and the Commission, having carefully considered the evidence, the pleadings, comments and other materials submitted in support and in opposition of the proposal, now, on this ____ day of _____, 2002,

FINDS,

1. ~~In this rule-making proceeding,~~ the Oil Conservation Division (hereinafter referred to as "the Division") has applied for repeal of existing Rule 118 of the Rules and Regulations of the Oil Conservation Division, 19.15.1.118 NMAC, and for adoption of a replacement rule, to be codified in the New Mexico Administrative Code as 19.15.2.52 NMAC.

To facilitate said rulemaking,

2. ~~T~~he Environmental Bureau of the Division (hereinafter referred to as "the Bureau") created a work group composed industry technical personnel, the New Mexico Oil and Gas Association, the Independent Producers Association of New Mexico, public representatives, other governmental agencies (including the Bureau of Land Management, and local emergency planning committees of several counties), the New Mexico Department of Public Safety and members of the Environmental Bureau. The work group was charged with reviewing a draft rule prepared by the Bureau and making

recommendations. That group has prepared and submitted a consensus draft of a proposed rule to the Commission. The work of this group has been of invaluable assistance to the Commission ~~in addressing these issues presented by the Division's application.~~

3. Two public hearings have been conducted, one on July 19, 2002 and a second on September 20, 2002. The Commission ~~has~~ also accepted written comments concerning the proposed rulemaking following the first hearing, and ~~accepted written comments~~ prior to the second hearing. The Commission also accepted a report and consensus draft from the hydrogen sulfide work group on October 15, 2002. The Commission deliberated on the application in open session during its meetings of August 30, September 27, October 25, and _____, 2002.

4. A draft of a new rule, 19.15.2.52 NMAC is attached hereto as Exhibit A. It should be adopted, published in the New Mexico Register, and adopted as a part of the Rules and Regulations of the Oil Conservation Division.

5. The need for effective regulation of hydrogen sulfide gas is undisputed. Hydrogen sulfide is an extremely toxic gas sometimes encountered in the drilling and production of oil and natural gas. The gas is so toxic that exposure to a concentration of between 350 to 500 parts per million for four to eight hours can cause death. Exposure to a concentration of between 600 and 1500 parts per million for two minutes or less can cause death. Its toxicity explains why exposure to hydrogen sulfide gas is the leading cause of sudden death in the workplace, according to the Centers for Disease Control, the National Institute for Occupational Safety and Health (hereinafter referred to as "NIOSH").

6. While hydrogen sulfide is one of the most odiferous substances that exist (it emits an odor like rotten eggs), exposure to concentrations of the gas around one hundred parts per million deaden the sense of smell so that it cannot be detected. Therefore, at its most deadly concentrations, it cannot be detected by smell alone.

7. Effects of exposure to hydrogen sulfide vary depending on the concentration and the duration of the exposure, the person's body weight, previous history of exposure to hydrogen sulfide, and the person's overall health. For example, exposure to fifty parts per million for a few minutes will induce a severe headache and produce difficulty breathing and thinking. Once a level of fifty parts per million is reached, regulations of the Occupational Health and Safety Administration (hereinafter referred to as "OSHA") require a worker to don protective equipment including a respirator. Exposure to one hundred parts per million for a few minutes will induce respiratory difficulties; regulations of OSHA require immediate workplace evacuation if concentrations reach this level. ~~The Occupational Health and Safety Administration~~ OSHA has declared that exposure to one hundred parts per million of hydrogen sulfide for thirty minutes is

"immediately dangerous to life and health" (IDLH). Exposure to a level of five hundred parts per million for a few minutes may induce unconsciousness ~~of~~ or death.

8. Hydrogen sulfide gas is already regulated in New Mexico through Rule 118, 19.15.1.118 NMAC.

9. The application of the Division seeking repeal Rule 118 and a replacement rule culminated an approximately two-year process during which the provisions of Rule 118 were critically examined.

10. ~~In~~ During the winter ~~of~~ 2000-01, the Director of the Division directed the ~~Environmental~~ Bureau to review ~~the rule~~ Rule 118 and determine whether ~~the rule~~ it was adequately protective of public safety. The Bureau subsequently gathered information from other governmental agencies, the American Petroleum Institute (API) and the American Society for Testing and Materials (ASTM). After comparing the information received to Rule 118 and conducting its own technical inquiries, the Bureau concluded that Rule 118 was not adequately protective of public safety and had serious flaws.

11. For example, during the hearings in this matter, witnesses employed by the Bureau testified that Rule 118 exempts facilities that process a volume fraction of hydrogen sulfide gas less than 10 mcf per day regardless of the actual concentration of gas that might result if a release were to occur. Thus, if a given facility handled 9.9 mcf of pure hydrogen sulfide each day, the facility would be exempt from regulation notwithstanding the fact that a release from such a facility could produce a lethal concentration of hydrogen sulfide gas. A facility that handles just less than 1,000 mcf per day of a gaseous mixture that consists of one percent hydrogen sulfide gas would also be exempt, notwithstanding the fact that a release could produce a radius of exposure of fifty five parts per million of hydrogen sulfide gas two hundred feet from the point of release and one hundred parts per million four hundred-fifty feet from the point of release.

12. Witnesses also testified that ~~the~~ Rule 118 exempts ~~from regulation~~ tanks that may contain a concentration of hydrogen sulfide gas up to 1,000 parts per million and certain other facilities that may contain a concentration of hydrogen sulfide gas up to 500 parts per million. Witnesses testified that such facilities are not required to operate according to any standards, are not required to have certain safety devices or procedures, signs, fencing or contingency plans.

13. It is thus evident that Rule 118 fails to adequately protect the public from the hazards of hydrogen sulfide and should be repealed and replaced with a more effective regulatory scheme.

14. Having found that the current regulatory scheme was inadequate, the Bureau set out to develop a replacement rule. The Bureau conducted air-dispersion models to

determine how hydrogen sulfide gas disperses in air following an accidental release. Such mathematical models are used to predict the probability of exposure to a given concentration of hydrogen sulfide gas at selected distances from a hypothetical point of release. As hydrogen sulfide moves away from the point of release, its concentration decreases as it disperses; mathematical models seek to define the concentrations at a certain distance from the theoretical point of release. Several models are available. The Bureau chose the Pasquill-Gifford equation, an equation derived from the Gaussian distribution plume model. This particular model assumes a continuous source. Thus, while the model tends in some cases to overstate the consequences of a release, ~~this~~ it serves to better protect public safety. Most states and the federal government use a steady state model like Pasquill-Gifford. The equation, through a coefficient, takes into account environmental factors and weather, and the mathematical experiments conducted by the Bureau used climatological data specific to New Mexico.

15. The Pasquill-Gifford model, providing both an adequate margin of safety for protection of the public, and having been accepted by other regulatory bodies, should be adopted in New Mexico and use of this model (or some other equivalent model approved by the Division) is required in Exhibit A.

16. As noted previously, one hundred parts per million is widely accepted as a point where exposure to hydrogen sulfide becomes dangerous to life. As noted, OSHA regards exposure to one hundred parts per million of hydrogen sulfide for thirty minutes as "immediately dangerous to life and health." If, applying the Pasquill-Gifford equation, a concentration of one hundred parts per million exists in any public area, or a concentration of five hundred parts per million exists at any public road or a concentration of one hundred parts per million exists three thousand feet from the release point, a potentially hazardous volume of hydrogen sulfide gas exists, and Exhibit A imposes requirements for operations of such facilities.

17. If a potentially hazardous volume is created, then Exhibit A also requires that the "radius of exposure" and the "area of exposure" be computed. The radius of exposure uses the mathematical model to describe a distance from a hypothetical release where certain regulatory requirements designed to be protective of public safety should attach. The radius of exposure in turn describes a circular area around the theoretical point of release; this describes the theoretical area of exposure.

18. If a concentration of one hundred parts per million or less is known to exist, a release would not be immediately dangerous to life. Once a gaseous mixture is determined to be below this threshold, Exhibit A requires no further actions with respect to the well, facility or operation.

19. To determine using the Pasquill-Gifford equation whether a potentially hazardous volume is present, the concentration of hydrogen sulfide within the gaseous

mixtures and the potential volume of a theoretical release need to be known. This can only be known by testing or by applying process knowledge, and Exhibit A requires that this determination be made on all wells, facilities or operations.

20. If a concentration greater than one hundred parts per million exists, a further determination of whether a potentially hazardous volume is present should be made, and regulatory requirements should attach to operations depending on the proximity of the operations to areas where the public will be present.

21. Some provision has to be made for wells that are drilled in areas where insufficient data exists to assess the hydrogen sulfide risk. The proposal of the Division assumes a 3,000 foot radius of exposure in these situations, and this does not seem an unreasonable assumption and provides an adequate margin of error.

22. While there was general agreement among persons participating in the rule-making process concerned the foregoing, some specific regulatory requirements contained in Exhibit A were a source of source of controversy. Some of these are discussed in the following paragraphs.

23. For example, the applicability of the regulation to Rule 711 became an issue. Exhibit A clarifies that surface waste management facilities are to be governed by both the new Rule 52 (19.15.3.52 NMAC) and Rule 711 (19.15.5.711 NMAC). Rule 711, and permits issued thereunder, may under some circumstances provide more stringent requirements for managing hydrogen sulfide gas than set out in Exhibit A. A representative for one such facility seemed to argue that this regulation, if enacted, would void provisions of Rule 711 and more stringent provisions of permits issued thereunder.

24. It seems, however, to be undisputed that surface waste facilities regulated under Rule 711 have the potential to generate hydrogen sulfide. Exhibit A is intended to protect public safety from the acute consequences of exposure to hydrogen sulfide. Such consequences can certainly result from surface waste management. Nothing therefore justifies excusing such facilities from the requirements of the proposed rule, nor can changes to Rule 711 be justified without going through the rule-making process to revisit that rule. Staff should be directed to examine the requirements of Rule 711 and determine whether changes to the hydrogen sulfide regime need to be reconsidered in light of this rulemaking.

25. The attached regulation should apply equally to surface waste management facilities as it does to all the other facilities, and nothing in this regulation can be interpreted to provide for a repeal of any provision of Rule 711 or to effect any change in any permit issued thereunder. The language Exhibit A has been amended to clearly state this proposition.

26. As noted, a consensus draft of the proposed regulation was presented by the hydrogen sulfide work group. That draft represented a consensus of members of the hydrogen sulfide gas workgroup and the Bureau concerning specific items of concern in earlier drafts. Many of the recommendations embodied in that draft should be accepted, and are reflected in Exhibit A.

27. However, several recommendations are not acceptable or reasonable and should not be adopted.

28. For example, the consensus draft provides that submission of the test results and the resulting radius of exposure is to be performed within one year and a hydrogen sulfide contingency plan should be submitted one year later. These time frames are simply too long to be reasonable. While it is true that the new rule adopts a different regulatory approach than the existing rule and well, facilities and operations should be provided with reasonable time to comply with the new requirements, two years is too long. Exhibit A provides six months to perform the initial testing and determination, and an additional six months ~~after the determination that a potentially hazardous volume exists~~ to prepare a hydrogen sulfide contingency plan.

29. The consensus draft proposed activation of the hydrogen sulfide contingency plan upon release of a potentially hazardous volume of hydrogen sulfide or when a concentration of fifty parts per million is created at the "boundary" of a facility. The problem with this approach is that a potentially hazardous volume is a calculated volume, and represents a worst-case scenario. A release, if one occurs, may not occur as calculated, or may represent a lesser volume than a worst-case scenario. This could present uncertainty at a critical time and could result in a delay of implementation of contingency plans and a delay in public notice and evacuation, and the benefits of having a plan to protect public safety could be lost. The problem with activating a plan based on a fifty parts per million concentration at the boundary of a facility is the difficulty in locating the boundary. Obviously, a plan must be activated if a potentially hazardous release occurs, and Exhibit A requires activation under these circumstances. To avoid the difficulty of quantifying some lesser standard, Exhibit A also requires activation of the plan if a potentially significant release occurs; this places the burden on the operator to use judgment and activate the plan when a significant release occurs or the situation is beginning to move out of control. Exhibit A also permits an operator to set a site-specific threshold that can also serve as an activation point; indeed, this is strongly recommended.

30. The consensus draft proposed "grand-fathering" ~~of~~ signs ~~used~~ to warn the public of the hazards of hydrogen sulfide at wells, facilities and operations. It is an unacceptable compromise of public safety to permit signage (which may exist at a well for the life of well) to become exempt from the provisions of the new rule indefinitely. However, it is also sensible to permit a reasonable length of time to replace signage, and

Exhibit A requires that nonconforming signage be replaced no later than one year after the effective date of the rule.

31. The consensus draft also provides a broad exemption from regulation under the proposed rule if the well, facility or operation is the subject of a regulatory program of another jurisdictional entity, such as the Bureau of Land Management, federal Department of Transportation, and OSHA. The proposed rule, however, differs in important respects from the rules and regulations of the Bureau of Land Management or OSHA, and including such a provision in the proposed rule would effectively write out many of its important provisions for wells on federal land. Such a provision should not appear in Exhibit A. However, Exhibit A does permit any operator to apply for an exemption from any provision of the rule should circumstances warrant. Should another regulatory program be shown to in cases be more stringent than that contained in Exhibit A, an exemption would be granted. Moreover, Exhibit A also permits submission of a hydrogen sulfide contingency plan that is prepared in conjunction with another regulatory program and, so long as it addresses the subjects described in Exhibit A, such a plan will be acceptable.

32. The consensus draft also responded to many comments concerning the electronic submission requirements of earlier drafts. As many are aware, the Division performs many of its functions electronically. As time goes on, more and more functions will be performed electronically. Earlier drafts reflected that reality. However, because of concerns expressed that some smaller operators may have limited ability to respond electronically, Exhibit A has been amended to *permit* electronic submission, not require it. Hopefully, the bulk of submissions will be made electronically.

33. The consensus draft also eliminated a provision that permitted the Division to require corrective actions if necessary to maintain control of a well or other facility and to safeguard public safety; the draft substituted language which is awkward and contains multiple standards. While the Division certainly has authority under the Oil and Gas Act to require corrective actions if necessary to maintain control of a well or other facility or to safeguard the public safety, that fact need not be repeated in Exhibit A. The deletion of the reference from Exhibit A should not be read as an abdication of that authority.

34. There has been some disagreement during the rulemaking process concerning the proposed requirement that an operator develop a hydrogen sulfide contingency plan, and what it should contain. Preparation of a contingency plan serves several objectives. First, it ensures that the operator focuses on emergency preparedness and thinks about what actions must be taken in the event of a release. If a release occurs, the exercise of writing a plan and thinking through the steps that must be taken may improve response and may save lives. Second, preparation of a plan provides the Division, the incident commander, the Department of Public Safety, and other emergency responders with basic information needed to make intelligent decisions concerning the release. For example,

having access to the telephone numbers of company personnel means that personnel can be contacted to address ~~the leak~~ before it becomes a threat to public safety. Having the names and telephone numbers available of persons potentially at risk simplifies evacuation, should that become necessary. ~~Knowing which roads might need to be closed can impact public safety.~~

35. The consensus draft argues for more flexibility in drafting a plan that is sensible when applied to a particular facility, and that is a sensible approach. Therefore, Exhibit A requires such plans to address certain subjects, but leaves the specificity in developing a plan to the operator. If it is apparent that a plan is defective, the Division has the authority under Exhibit A to require amendments to address the deficiency.

36. The consensus draft permits substitution of a hydrogen sulfide contingency plan prepared for another agency, such as the Bureau of Land Management. The concept has not been perpetuated in Exhibit A. While a plan prepared for another agency may, in fact, comply fully with the requirements under the proposed rule, in some cases it may not. The Division should be permitted to review the plan and determine whether it is acceptable before substitution is permitted. This is the approach taken in Exhibit A.

37. There has been some controversy during the rulemaking process about the use of employee protection standards (OSHA and NIOSH), the argument being that double regulation could result. It should be very clear that Exhibit A is not a worker protection rule. It is a public safety rule. However, as several witnesses testified during the two public hearings in this matter, protection of workers is relevant to public safety. If workers are not protected from hydrogen sulfide gas, the public safety may suffer because it is the workers who are the first line of defense. Only the workers can ~~contain or~~ prevent a release of hydrogen sulfide gas. If the workers are alerted to a release, they can contain it or give a timely warning to permit evacuation.

38. The training requirements set forth in Exhibit A share the same rationale. Workers need to be trained to properly respond to hydrogen sulfide to protect themselves and the public from exposure. Well-trained workers can prevent releases in the first place. If a situation gets out of control, well-trained workers can provide necessary (and early) warning and evacuation. Well-trained workers will be able to provide a warning of the hazardous situation to those who happen on the situation.

39. It appears from the record of these proceedings, the testimony and comments received, and from a review of the various forms of the proposed language, that Exhibit A provides the best available balance of sensible regulation and public safety and represents a significant improvement over Rule 118.

40. Exhibit A should be adopted as a rule of the Oil Conservation Division and present Rule 118 should be repealed effective as of its effective date.

IT IS THEREFORE ORDERED:

1. A new regulation of the Oil Conservation Commission, to be codified at 19.15.2.52 NMAC (or elsewhere if necessary to meet requirements of the Commission of Public Records), copy attached as Exhibit A, is hereby adopted, effective as of the date of its publication in the New Mexico Register. Staff is instructed to forthwith seek publication of the new regulation in its entirety in the Register.

2. Staff of the Oil Conservation Division is instructed to examine the requirements of Rule 711 and determine whether changes to the hydrogen sulfide regime need to be reconsidered in light of this rulemaking.

3. Jurisdiction of this matter is retained for entry of such further orders as may be necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

LORI WROTENBERY, CHAIR

JAMI BAILEY, MEMBER

ROBERT LEE, MEMBER

S E A L

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION FOR THE PURPOSE OF CONSIDERING:

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November 22

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2. To assist with the rulemaking, the Environmental Bureau of the Division (hereinafter referred to as "the Bureau") created a work group composed of industry technical personnel, the New Mexico Oil and Gas ~~Association~~, the Independent Petroleum ~~Producers~~ Association of New Mexico, public representatives, other governmental agencies (including the Bureau of Land Management, and local emergency planning committees of several counties), the New Mexico Department of Public Safety and members of the Environmental Bureau. The work group was charged with reviewing a

who?

draft rule prepared by the Bureau and making recommendations. That group has prepared and submitted a consensus draft of a proposed rule to the Commission. The work of this group has been of invaluable assistance to the Commission.

3. Two public hearings have been conducted, one on July 19, 2002 and a second on September 20, 2002. The Commission accepted written comments concerning the proposed rulemaking following the first hearing, and prior to the second hearing. The Commission also accepted a report and consensus draft from the hydrogen sulfide work group on October 15, 2002. The Commission deliberated on the application in open session during its meetings of August 30, September 27, October 25, and _____, 2002.

4. A draft of a new rule, 19.15.2.52 NMAC, is attached hereto as Exhibit A. It should be ~~adopted~~, published in the New Mexico Register, and adopted as a part of the Rules and Regulations of the Oil Conservation Division.

5. The need for effective regulation of hydrogen sulfide gas is undisputed. Hydrogen sulfide is an extremely toxic gas sometimes encountered in the drilling and production of oil and natural gas. The gas is so toxic that exposure to a concentration of between 350 to 500 parts per million for four to eight hours can cause death. Exposure to a concentration of between 600 and 1500 parts per million for two minutes or less can cause death. Its toxicity explains why exposure to hydrogen sulfide gas is the leading cause of sudden death in the workplace, according to the Centers for Disease Control, the National Institute for Occupational Safety and Health (hereinafter referred to as "NIOSH").

6. While hydrogen sulfide is one of the most odiferous substances that exist (it emits an odor like rotten eggs), exposure to concentrations of the gas around one hundred parts per million deaden the sense of smell so that it cannot be detected. Therefore, at its most deadly concentrations, it cannot be detected by smell alone.

7. Effects of exposure to hydrogen sulfide vary depending on the concentration and the duration of the exposure, the person's body weight, previous history of exposure to hydrogen sulfide, and the person's overall health. For example, exposure to fifty parts per million for a few minutes will induce a severe headache and produce difficulty breathing and thinking. Once a level of fifty parts per million is reached, regulations of the Occupational Health and Safety Administration (hereinafter referred to as "OSHA") require a worker to don protective equipment including a respirator. Exposure to one hundred parts per million for a few minutes will induce respiratory difficulties; regulations of OSHA require immediate workplace evacuation if concentrations reach this level. OSHA has declared that exposure to one hundred parts per million of hydrogen sulfide for thirty minutes is "immediately dangerous to life and health" (IDLH). Exposure to a level of five hundred parts per million for a few minutes may induce unconsciousness or death.

8. Hydrogen sulfide gas is already regulated in New Mexico through Rule 118, 19.15.1.118 NMAC.

9. The application of the Division seeking repeal Rule 118 and a replacement rule culminated an approximately two-year process during which the provisions of Rule 118 were critically examined.

10. During the winter of 2000-01, the Director of the Division directed the Bureau to review the Rule 118 and determine whether it was adequately protective of public safety. The Bureau subsequently gathered information from other governmental agencies, the American Petroleum Institute (API) and the American Society for Testing and Materials (ASTM). After comparing the information received to Rule 118 and conducting its own technical inquiries, the Bureau concluded that Rule 118 was not adequately protective of public safety and had serious flaws.

11. For example, during the hearings in this matter, witnesses employed by the Bureau testified that Rule 118 exempts facilities that process a volume fraction of hydrogen sulfide gas less than 10 mcf per day regardless of the actual concentration of gas that might result if a release were to occur. Thus, ~~if a given facility handled 9.9 mcf of pure hydrogen sulfide each day, the facility would be exempt from regulation notwithstanding the fact that a release from such a facility could produce a lethal concentration of hydrogen sulfide gas.~~ A facility that handles just less than 1,000 mcf per day of a gaseous mixture that consists of one percent hydrogen sulfide gas would ~~also~~ be exempt, notwithstanding the fact that a release could produce a radius of exposure of fifty five parts per million of hydrogen sulfide gas two hundred feet from the point of release and one hundred parts per million four hundred-fifty feet from the point of release.

12. Witnesses also testified that Rule 118 exempts tanks that may contain a concentration of hydrogen sulfide gas up to 1,000 parts per million and certain other facilities that may contain a concentration of hydrogen sulfide gas up to 500 parts per million. Witnesses testified that such facilities are not required to operate according to any standards, are not required to have certain safety devices or procedures, signs, fencing or contingency plans.

13. It is thus evident that Rule 118 fails to adequately protect the public from the hazards of hydrogen sulfide and should be repealed and replaced with a more effective regulatory scheme.

14. Having found that the current regulatory scheme was inadequate, the Bureau set out to develop a replacement rule. The Bureau ~~conducted~~ air-dispersion models to determine how hydrogen sulfide gas disperses in air following an accidental release. Such mathematical models are used to predict the probability of exposure to a given

concentration of hydrogen sulfide gas at selected distances from a hypothetical point of release. As hydrogen sulfide moves away from the point of release, its concentration decreases as it disperses; mathematical models seek to define the concentrations at a certain distance from the theoretical point of release. Several models are available. The Bureau chose the Pasquill-Gifford equation, an equation derived from the Gaussian distribution plume model. This particular model assumes a continuous source. Thus, while the model tends in some cases to overstate the consequences of a release, it serves to better protect public safety. Most states and the federal government use a steady state model like Pasquill-Gifford. The equation, through a coefficient, takes into account environmental factors and weather, and the ~~mathematical experiments~~ modeling conducted by the Bureau used climatological data specific to New Mexico.

15. The Pasquill-Gifford model, providing both an adequate margin of safety for protection of the public, and having been accepted by other regulatory bodies, should be adopted in New Mexico and use of this model (or some other equivalent model approved by the Division) is required in Exhibit A.

16. As noted previously, one hundred parts per million is widely accepted as a point where exposure to hydrogen sulfide becomes dangerous to life. As noted, OSHA regards exposure to one hundred parts per million of hydrogen sulfide for thirty minutes as "immediately dangerous to life and health." If, applying the Pasquill-Gifford equation, a concentration of one hundred parts per million exists in any public area, or a concentration of five hundred parts per million exists at any public ~~road or a~~ more than 3 concentration of one hundred parts per million exists ~~three~~ thousand feet from the release point, a potentially hazardous volume of hydrogen sulfide gas exists, and Exhibit A imposes requirements for operations of such facilities.

17. If a potentially hazardous volume is created, then Exhibit A also requires that the "radius of exposure" and the "area of exposure" be computed. The radius of exposure uses the mathematical model to describe a distance from a hypothetical release where certain regulatory requirements designed to be protective of public safety should attach. The radius of exposure in turn describes a circular area around the theoretical point of release; this describes the theoretical area of exposure.

18. If a concentration of less than one hundred parts per million ~~or less~~ is known to exist, a release would not be immediately dangerous to life. Once a gaseous mixture is determined to be below this threshold, Exhibit A requires no further actions with respect to the well, facility or operation.

19. To determine using the Pasquill-Gifford equation whether a potentially hazardous volume is present, the concentration of hydrogen sulfide within the gaseous mixture and the potential volume of a theoretical release need to be known. This can

only be known by testing or by applying process knowledge, and Exhibit A requires that this determination be made on all wells, facilities or operations.

20. If a concentration ~~greater than~~ of one hundred parts per million or greater exists, a further determination of whether a potentially hazardous volume is present should be made, and regulatory requirements should attach to operations depending on the proximity of the operations to areas where the public will be present.

21. Some provision has to be made for wells that are drilled in areas where insufficient data exists to assess the hydrogen sulfide risk. The proposal of the Division assumes a 3,000 foot radius of exposure in these situations, and this does not seem an unreasonable assumption and provides an adequate margin of error.

22. While there was general agreement among persons participating in the rule-making process concerning the foregoing, some specific regulatory requirements contained in Exhibit A were a source of ~~source of~~ controversy. Some of these are discussed in the following paragraphs.

23. For example, the applicability of the regulation to Rule 711 became an issue. Exhibit A clarifies that surface waste management facilities are to be governed by both the new Rule 52 (19.15.3.52 NMAC) and Rule 711 (19.15.5.711 NMAC). Rule 711, and permits issued thereunder, may under some circumstances provide more stringent requirements for managing hydrogen sulfide gas than set out in Exhibit A. A representative for one such facility seemed to argue that this regulation, if enacted, would void provisions of Rule 711 and more stringent provisions of permits issued thereunder.

24. It seems, however, to be undisputed that surface waste facilities regulated under Rule 711 have the potential to generate hydrogen sulfide. Exhibit A is intended to protect public safety from the acute consequences of exposure to hydrogen sulfide. Such consequences can certainly result from surface waste management. Nothing therefore justifies excusing such facilities from the requirements of the proposed rule, nor can changes to Rule 711 be justified without going through the rule-making process to revisit that rule. Staff should be directed to examine the requirements of Rule 711 and determine whether changes to the hydrogen sulfide regime in that rule need to be considered in light of this rulemaking.

25. The attached regulation should apply equally to surface waste management facilities as it does to all the other facilities, and nothing in this regulation can be interpreted to provide for a repeal of any provision of Rule 711 or to effect any change in any permit issued thereunder. The language Exhibit A has been amended to clearly state this proposition.

26. As noted, a consensus draft of the proposed regulation was presented by the hydrogen sulfide work group. That draft represented a consensus of members of the hydrogen sulfide gas workgroup and the Bureau concerning specific items of concern in earlier drafts. Many of the recommendations embodied in that draft should be accepted, and are reflected in Exhibit A.

27. However, several recommendations are not acceptable or reasonable and should not be adopted.

28. For example, the consensus draft provides that submission of the test results and the resulting radius of exposure is to be performed within one year and a hydrogen sulfide contingency plan should be submitted one year later. These time frames are simply too long to be reasonable. While it is true that the new rule adopts a different regulatory approach than the existing rule and well facilities and operations should be provided with reasonable time to comply with the new requirements, two years is too long. Exhibit A provides six months to perform the initial testing and determination, and an additional six months to prepare a hydrogen sulfide contingency plan.

29. The consensus draft proposed activation of the hydrogen sulfide contingency plan upon release of a potentially hazardous volume of hydrogen sulfide or when a concentration of fifty parts per million is created at the "boundary" of a facility. The problem with this approach is that a potentially hazardous volume is a calculated volume, and represents a worst-case scenario. A release, if one occurs, may not occur as calculated, or may represent a lesser volume than a worst-case scenario. This could present uncertainty at a critical time and could result in a delay of implementation of contingency plans and a delay in public notice and evacuation, and the benefits of having a plan to protect public safety could be lost. The problem with activating a plan based on a fifty parts per million concentration at the boundary of a facility is the difficulty in locating the boundary. Obviously, a plan must be activated if a potentially hazardous release occurs, and Exhibit A requires activation under these circumstances. To avoid the difficulty of quantifying some lesser standard, Exhibit A also requires activation of the plan if a potentially significant release occurs; this places the burden on the operator to use judgment and activate the plan when a significant release occurs or the situation is beginning to move out of control. Exhibit A also permits an operator to set a site-specific threshold that can also serve as an activation point; indeed, this is strongly recommended.

30. The consensus draft proposed that the new regulation "grandfather" requirements for new signs used to warn the public of the hazards of hydrogen sulfide at wells, facilities and operations. It is an unacceptable compromise of public safety to permit signage (which may exist at a well for the life of well) to become exempt from the provisions of the new rule indefinitely. However, it is also sensible to permit a reasonable length of time to replace signage, and Exhibit A requires that nonconforming

signage be replaced or ~~install newly required signs~~ no later than one year after the effective date of the rule.

31. The consensus draft also provides a broad exemption from regulation under the proposed rule if the well, facility or operation is the subject of a regulatory program of another jurisdictional entity, such as the Bureau of Land Management, federal Department of Transportation, and OSHA. The proposed rule, however, differs in important respects from the rules and regulations of the Bureau of Land Management or OSHA, and including such a provision in the proposed rule would effectively write out many of its important provisions for wells on federal land. Such a provision should not appear in Exhibit A. However, Exhibit A does permit any operator to apply for an exemption from any provision of the rule should circumstances warrant. ~~Should another~~ regulatory program ~~be shown to in cases be more stringent than that contained in Exhibit A, an exemption would be granted~~. Moreover, Exhibit A also permits submission of a hydrogen sulfide contingency plan that is prepared in conjunction with another regulatory program and, so long as it addresses the subjects described in Exhibit A, such a plan will be acceptable.

32. The consensus draft also responded to many comments concerning the electronic submission requirements of earlier drafts. As many are aware, the Division performs many of its functions electronically. As time goes on, more and more functions will be performed electronically. Earlier drafts reflected that reality. However, because of concerns expressed that some smaller operators may have limited ability to respond electronically, Exhibit A has been amended to *permit* electronic submission, not require it. Hopefully, the bulk of submissions will be made electronically.

33. The consensus draft also eliminated a provision that permitted the Division to require corrective actions if necessary to maintain control of a well or other facility and to safeguard public safety; the draft substituted language ~~which~~ is awkward and contains multiple standards. While the Division certainly has authority under the Oil and Gas Act to require corrective actions if necessary to maintain control of a well or other facility or to safeguard the public safety, that fact need not be repeated in Exhibit A. The deletion of the reference from Exhibit A should not be read as an abdication of that authority.

34. There has been some disagreement during the rulemaking process concerning the proposed requirement that an operator develop a hydrogen sulfide contingency plan, and what it should contain. Preparation of a contingency plan serves several objectives. First, it ensures that the operator focuses on emergency preparedness and thinks about what actions must be taken in the event of a release. If a release occurs, the exercise of writing a plan and thinking through the steps that must be taken may improve response and may save lives. Second, preparation of a plan provides the Division, the incident commander, the Department of Public Safety, and other emergency responders with basic information needed to make intelligent decisions concerning the release. For example,

having access to the telephone numbers of company personnel means that personnel can be contacted to address an incident before it becomes a threat to public safety. Having the names and telephone numbers available of persons potentially at risk simplifies evacuation, should that become necessary.

35. The consensus draft argues for more flexibility in drafting a plan that is sensible when applied to a particular facility, and that is a sensible approach. Therefore, Exhibit A requires such plans to address certain subjects, but leaves the specificity in developing a plan to the operator. If it is apparent that a plan is defective, the Division has the authority under Exhibit A to require amendments to address the deficiency.

36. The consensus draft permits substitution of a hydrogen sulfide contingency plan prepared for another agency, such as the Bureau of Land Management. The concept has not been perpetuated in Exhibit A. As noted in paragraph 31, herein, a plan prepared for another agency may in fact comply fully with the requirements under the proposed rule; in other cases it may not. The Division should be permitted to review the plan and determine whether it is acceptable before substitution is permitted. This is the approach taken in Exhibit A.

37. There has been some controversy during the rulemaking process about the use of employee protection standards (OSHA and NIOSH), the argument being that double regulation could result. It should be very clear that Exhibit A is not a worker protection rule. It is a public safety rule. However, as several witnesses testified during the two public hearings in this matter, protection of workers is relevant to public safety. If workers are not protected from hydrogen sulfide gas, the public safety may suffer because it is the workers who are the first line of defense in the event of a release. Only the workers can prevent or contain a release of hydrogen sulfide gas. If the workers are alerted to a release, they can contain it or give a timely warning to permit evacuation.

38. The training requirements set forth in Exhibit A share the same rationale. Workers need to be trained to properly respond to hydrogen sulfide to protect themselves and the public from exposure. Well-trained workers can prevent releases in the first place. If a situation gets out of control, well-trained workers can provide necessary (and early) warning and evacuation. Well-trained workers will be able to provide a warning of the hazardous situation to those who happen on the situation.

39. It appears from the record of these proceedings, the testimony and comments received, and from a review of the various forms of the proposed language, that Exhibit A provides the best available balance of sensible regulation and public safety and represents a significant improvement over Rule 118.

40. Exhibit A should be adopted as a rule of the Oil Conservation Division and present Rule 118 should be repealed ~~effective as of its effective date~~.

IT IS THEREFORE ORDERED:

1. A new regulation of the Oil Conservation Commission, to be codified at 19.15.2.52 NMAC (or elsewhere if necessary to meet requirements of the Commission of Public Records), copy attached as Exhibit A, is hereby adopted, effective as of the date of its publication in the New Mexico Register. Staff is instructed to forthwith seek publication of the new regulation in its entirety in the Register.

2. Staff of the Oil Conservation Division is instructed to examine the requirements of Rule 711 and determine whether changes to the hydrogen sulfide regime need to be reconsidered in light of this rulemaking.

3. Jurisdiction of this matter is retained for entry of such further orders as may be necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

LORI WROTENBERY, CHAIR

JAMI BAILEY, MEMBER

ROBERT LEE, MEMBER

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