Presentation from John W. Prather, SHS/CSHS/ES to Oil Conservation Commission, Santa Fe, NM, September 20, 2002

I currently am co-owner of Safety Consulting & Training, LLC, in Hobbs, N.M., where for the last 8 years, I have conducted industrial safety and compliance training for a number of oil and gas service companies, production companies and refineries, using compliance standards of the Department of Transportation (DOT), Occupational Safety and Health Administration (OSHA) as well as Mine Safety and Health Administration (MSHA).

I have 37+ years of experience in the mining, petrochemical refining, and oil & gas industries. My experience as a trainer dates back to my military service with the U.S. Navy/U.S. Marine Corps. I have certifications from MSHA as a Safety, Health and First Aid Instructor and proudly carry the notorious mining industry "Blue Card". I have completed the Department of Labor, OSHA Training Institutes requirement and have been awarded a certificate as a" Safety & Health Specialist" (SHS), a certificate as a "Construction Safety & Health Specialist" (CSHS) and most recently have received a certificate as an "Environmental Specialist" (ES).

In addition, I have completed the requirements of the American Society of Safety Engineers (ASSE) Safety Management Program and have been awarded a "Certificate in Safety Management", and most recently have completed the NCCER requirements as a "Master Trainer".

I am certified as an H_2S Instructor in accordance with ANSI Z390.1-1995 (R-2000), as well as a Medic, National Safety Council and American Red Cross First Aid/ CPR Instructor. With the experience and training combined, I have met the requirements of OSHA 29CFR 1910.120 , Appendix E, as a Training Director/ Instructor.

In perusal of the most recent draft copies of Rule 19.15.2.51 & 19.15.2.52 , we have found 4 areas that have caused us a great deal of concern. The first being in 19.15.2.51, paragraph C– Definitions, Potentially Hazardous Volume. The levels of H_2S referred to as Hazardous Volumes being 100 ppm and 500 ppm, we feel that these levels are extremely high, considering recent documentation on physical damage to the human body as well as long term and lasting residual effects that take place at much lower levels. I refer you to the first enclosed document, , Hydrogen Sulfide, Immediately Dangerous to Life and Health (IDLH) documentation. This document, coming from **NIOSH** and last updated August 16, l996, gives a level of 100 ppm as being Immediately Dangerous to Life & Health (IDLH) with an American Congress of Industrial Hygienist, Threshold Limit Value (TLV) as being 10 ppm.

Based on this document, the NIOSH recommended exposure limit of 10 ppm has become a point in which many agencies require that some sort of corrective action be taken. I refer you to the second enclosed document, a copy of the ***Federal Registry of the U. S. Congress, Volume 62, # 17, Monday January 27, l997, Rules and Regulations, Department of the Interior, Minerals Management Service, 30 CFR Part 250. Hydrogen Sulfide Requirements For Operations in the Outer Continental Shelf.*** This document, in many places, refers to contingency plans, monitoring equipment, etc., and throughout the document, never allows levels to exceed 20 ppm without some sort of corrective action, (i.e. ***250.67 Hydrogen Sulfide, paragraph F, page 3796,***

Item 5, Actions that you will take when the concentrations of H2S in the atmosphere reaches 20 ppm., who will be responsible for those actions and a description of the audible and visual alarms to be activated." The same paragraph F part 10, ***"The agencies and facilities you will notify in case of a release of H_2S, [that constitute an emergency], how you will notify them and their telephone numbers. Include all facilities that might be exposed to atmospheric concentrations of 20 ppm or more of H_2S. "***

30 CFR Ch. II, Appendix B, Paragraph 10– Responsibilities and Duties, ii, ***The duties or responsibilities and operating procedures to be initiated when the concentration of H_2S in the atmosphere reaches the following ; (a) 10 ppm level (b) 20 ppm level, and (c) 50 ppm level.***

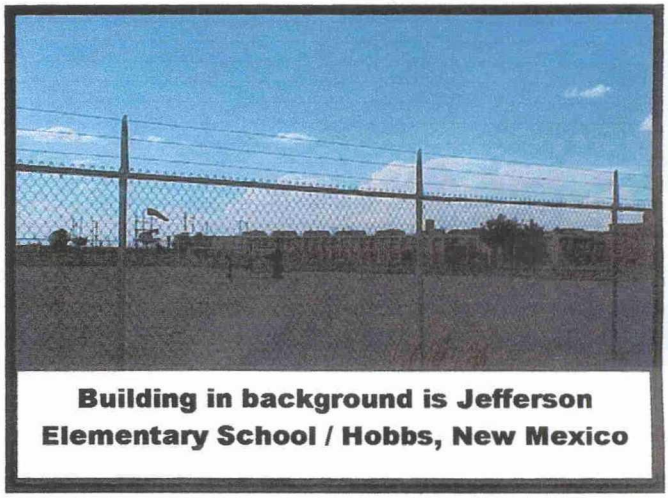
49 CFR Part 160– Federal Register Volume 55, # 226– Friday, November 23, 1990, page 48958, Center column, bottom 4 lines, ***"the 100 ppm H_2S in the gas stream, is used solely as a threshold criterion to identify those wells ad facilities which are subject to the requirements of this order. The criterion of 10 ppm of H_2S in ambient air applies to situations where protection of essential personnel and/ or the public health and safety is an issue."***
page 48964 of the same document, paragraph C. 3, c.
"Three commenters suggested that the threshold limits of the visual and audible alarms of 10 and 15 ppm respectively, were not appropriate, especially the 15 ppm level. The BLM recognizes the 20 ppm as used in industry and advocated by the American Petroleum Institute (API), however, to be consistent with the federal OSHA requirements, the BLM adopted the limits of 10 ppm time weighted average (TWA), and 15 ppm short term exposures for H_2S."

In the past, it has been assumed that H2S being a toxic gas, when inhaled by the human body at certain concentrations, causes certain physical effects. Once exhaled, the effects can correct themselves and go away. Recent research in this area however, indicates that this may very well be incorrect. I refer you to an article from the Houston Chronicle, 11/12/97, ***New Alarm Over H2S , Researchers Document Lasting Damage to the Human Nervous System;*** as well as an article taken from the Playa Del Rey California Business Wire, 6/11/01, ***Toxic Gas Threshold Believed Dangerously High in Playa Vista Report.***

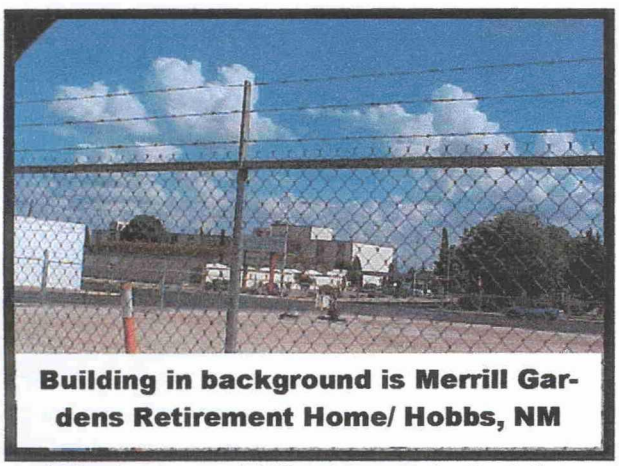
Also enclosed, is a copy of a special report from the Houston Chronicle, entitled, **The Brimstone Battles**, which was a special report on H_2S and it deals with many of the current issues concerning H_2S between the public, those companies that produce H_2S, and the regulatory agencies charged with controlling exposures to H_2S and the public safety. When reviewing the section titled, **Denver City, Death Came From a Cloud**, keep in mind that Denver City, Texas, being a next door neighbor to the New Mexico communities of Lovington, Tatum, Hobbs and an adjacent county to Lea, but is also separated by that imaginary line that changes from Texas to NM. Please pay special attention to the article **Lost Opportunity, EPA Had it's Chance to Regulate H_2S**. H_2S issues in New Mexico are throughout this article as well. In the article from 11/8/97, **Locales Differ, But Similar Tales of Frustration Heard, Shouted Down in Artesia**, deals with the frustration of some of the citizens of our state and our own Environmental Department.

In short, we would like to see potentially hazardous volumes being no more than what has already been recognized as fatal and Immediately Dangerous to Life and Health (IDLH), that being 100 ppm or less. Keep in mind that the locations of H_2S producing wells, are not all located in

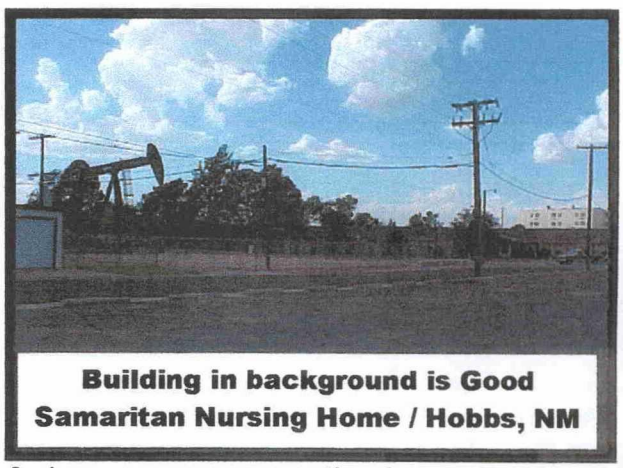
remote ranch areas, removed from the populous of New Mexico, but some of these are located immediately across the street from retirement homes, churches, hospitals, and some are even located in our school yards, where the future of New Mexico is in a "down wind" area from the well head. Many of these places, to knowingly allow them to fall within a 500 ppm radius of exposure before some sort of emergency corrective action is initiated, is negligent to the point of industrial murder. 100 ppm has been known to be a fatal dose. Dosage, being based on the reactions caused to a 150 healthy adult, when we equate that dosage back to the 50 pound 2nd grader in the New Mexico elementary school system, we must break it down to a per pound to body weight ratio. The 50 pound second grader has 1/3 of the body weight of a 150 pound adult, so the same physical effects caused to the adult by 100 ppm would appear in the 50 pound person at a concentration of 33 ppm , or 1/3 the adult dosage and the 100 ppm exposure would be 3 times as much as in an adult exposure. We cannot use a "one size fits all" dosage and expect to protect the worse case scenario. The same would apply to the senior citizens in the nursing homes who are already suffering from various circulatory and /or respiratory health problems.



Building in background is Jefferson Elementary School / Hobbs, New Mexico



Building in background is Merrill Gardens Retirement Home/ Hobbs, NM



Building in background is Good Samaritan Nursing Home / Hobbs, NM

What we would like to see, is that the point of where emergency action is to take place any time that H_2S is detected in a concentration of 100 ppm at the bell nipple or 10 ppm in ambient air, that immediate action will be initiated to control the release and contingency plans will be enacted to protect the workers and the general public. This is more in line with other requirements such as 39 CFR Part 3160 Onshore Oil and Gas Operations– Federal and Indian Oil & Gas Leases; Federal Register Volume 55, Part 226, Friday 11/23/90, page 48973, vii," *When H2S is detected in excess of 10 ppm at any detection point, red flags shall be displayed.* ***Corrective Action:*** *display red flag.* ***Normal abatement period:*** *Prompt Correction Required.;* ***e. Warning System Response.*** *When H_2S is detected in excess of 10 ppm at any detection point, all non-essential personnel shall be moved to a safe area and essential personnel [i.e., those necessary to maintain control of the well], shall wear pressure demand type breathing apparatus. Once accomplished, operations may proceed."*

RULE 52 , paragraph f, Signage at wells, facilities or operations. The paragraph states that this shall apply to every well, operation or system at which the concentration of Hydrogen Sulfide is 100 ppm or greater. In paragraphs 1, 2 & 3, the same wording appears, the signs shall read "DANGER—POISON GAS, HYDROGEN SULFIDE PRESENT" or as appropriate, " CAUTION– POISON GAS– HYDROGEN SULFIDE MAY BE PRESENT".

OSHA regulation 29 CFR 1910.145, which is based on ANSI Z535.2-1991, gives the requirements for color and format for three levels of Hazard Communications signs, those being "Danger", "Warning", and "Caution". It goes further to state, that **"DANGER"** is to be used to indicate that an immediate hazard exists that could cause death or serious injury. The wording and the symbol **"Caution",** is to be used to indicate that a potentially hazardous situation could cause minor or moderate injury. We feel the line **"Caution Poison Gas Hydrogen Sulfide Gas May be Present"** should be removed, due to the fact that the indication for minor or moderate injury is non-applicable when the sign is required at the H_2S level of 100 ppm, which is the established Immediately Dangerous to Life or Health (IDLH) concentration. We feel the appropriate sign would be the one meeting the ANSI description for format and reading,

"DANGER– POISON GAS– HYDROGEN SULFIDE".

The third area on page 8, c. Detection and monitoring equipment, 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 20 ppm. The level of 20 ppm is not in line with current industry standards. These alarms, by other federal regulations and company policies, are set to alarm at 10 ppm, which is the accepted permissible exposure limit. The decision to set the alarms at 10 ppm were based on an H2S Threshold Limit Value of 20 ppm, a point at which physical effects of H_2S poisoning is recognized to take place on the human body. It has been decided that action should be taken before the stage is reached allowing the physical effects to commence. If we wait until the physical effects manifest themselves, we have waited passed the point of being reasonable and prudent. We recommend that this paragraph be changed to read **"10 ppm"** instead of the 20 ppm.

Page 9, paragraph a, reading in part,..."*but is encountered during drilling in a concentration of 100 ppm or greater in the gaseous mixture is very unclear as to where this sample is to actually be taken. We would recommend that the wording,* "***but is encountered during drilling in a concentration level of 100 ppm or greater at the bell nipple"*** would be more clear and have the language of the industry as well as other regulations, the same being true in paragraph b in the line reading, " in excess of 100 ppm is encountered while drilling".

Paragraph d– "100 ppm in public areas, 500 ppm at any public road, or 100 ppm, 3000 feet from the site of release", these levels again are , way too high for the descriptions given. We can show you many places in southeastern NM where producing wells are located quite literally in the back yard, with residences located within 100 feet of the well head. These wells having levels of 10 ppm, 15 ppm and 50 ppm being levels that are known to cause negative effects on the human body, with many of these having flowlines that are located under the city streets and in the front and back yards of residences. For a producer not to be required to take corrective action on a leak located where at times, can be as little as 15 to 20 foot from Mrs. Brown's front door, until the level reaches 5 times the recognized IDLH concentration, is extreme negligence.

Page 10, paragraph i, Personal Protection & Training. *All persons being responsible for the implementation of any Hydrogen Sulfide contingency plan, shall be provided training in Hydrogen sulfide hazards, detection, personal protection and contingency procedures.* There is no provision for the training of personnel who work in and around potentially lethal Hydrogen Sulfide exposures. It only requires that people responsible for the contingency plans have such training. It is required by OSHA standards 29 CFR 1910.1200– Hazard Communications that... "all employees having the potential to come in contact with a hazardous substance be trained in the recognition of the hazardous substance , how to protect themselves from contact and how to respond to a hazardous release or chemical emergency." There has been a concern in the industry for many years as to the need for training to enable all workers to work safely in a potential H2S environment. It is for that reason, that the American National Standards Institute (ANSI) developed ANSI Z390– H2S Training Criteria. A draft copy of the standard is enclosed. It describes the minimum criteria that should be included in an H2S employee training course, which includes state and federal regulatory requirements. Section 3 Training Critera 3.1 Physical and Chemical Properties of H2S

3.2 Sources of H2S, 3.3 Human Physiology and Medical Evaluation 3.4 Work Procedures; 3.5 Personal Protective Equipment; 3.6 Use of Contingency Plans and Emergency Response; 3.7 Burning, Flaring and Venting of H2S; 3.8 State and Federal Regulator Requirements; 3.9 H2S Release, Dispersion Models; 3.10 Rescue Techniques, First Aid and Post Exposure Evaluations; 3.11 Methods of Detection and Monitoring; 3.12 Engineering Controls, 3.13 Transportation of Hydrogen Sulfide Cargos; 3.14 Emerging Technology

Section 4 Gives Instructor Qualifications and Proficiency

This is a very important area and is based upon even the best of instructors cannot pass along to the most receptive of students those things that he does not know himself. The instructor has a very important responsibility to make himself aware of all things relevent to the topic in order that he might be able to teach them to the students, especially when the topic is relevant to the students life and health.

Section 5 Describes how the training must be documented and how records must be kept.

Section 6 Described student competency and qualifications.

We have found that training meeting this criteria is of the utmost importance to ensure safe work practices in all work areas where H2S may be present. We would very much like to see wording in the new Rule 52 stating," *that all personnel involved in any type of H2S operations, both those personnel in the oil & gas industries as well as those people in law enforcement and public safety that may be included in H2S release contingency plans, be required to be trained in the hazards of H2S and that training shall , at a minimum, meet the requirements of ANSI Z390 H2S Training Criteria."*

We feel that this is a very important part of the rule, due to the fact that training in this area today in the oil and gas industry runs the full gambit from in-depth, high quality training courses down to in some cases, " *That stuff is pretty dangerous , so ya'll be careful".* We have found that in some cases as well, especially those in the public safety sector, such as volunteer fire departments, county sheriffs departments, etc., are going blindly into these emergency situations without any training whatsoever. Thank you for your time in allowing me to address this committee.

John w. Prather, SHS/CHSH/ES