

**STATE OF NEW MEXICO
BEFORE THE ENVIRONMENTAL IMPROVEMENT BOARD**

IN THE MATTER OF:

PROPOSED NEW REGULATION

20.2.50

No. EIB 21-27 (R)

Oil and Gas Sector – Ozone Precursor Pollutants

REBUTTAL TESTIMONY OF KEN NICHOLS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS FOR THE RECORD.

**A. Kenneth Nichols
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Austin, Texas 78759**

Q. ARE YOUR QUALIFICATIONS PROVIDED IN YOUR DIRECT TESTIMONY IN THIS MATTER?

A. Yes.

Q. IN NMED EXHIBIT 32, NMED TECHNICAL WITNESSES MS. BISBEY-KUEHN AND MR. PALMER TESTIFY THAT PRODUCED WATER MANAGEMENT UNIT STANDARDS DETAILED IN PROPOSED 20.2.50.126 NMAC SHOULD BE ADOPTED AS PROVIDED IN NMED EXHIBIT 41. HAVE YOU REVIEWED THIS PROPOSAL AND RELATED TESTIMONY?

A. I have reviewed the proposal and testimony.

Q. IN NMED EXHIBIT 32, PAGE 152, LINES 2-9, MS. BISBY-KEUHN AND MR. PALMER TESTIFY THAT PROPOSED 20.2.50.126 NMAC SHOULD APPLY TO A “PERMANENT PIT.” IN ITS REDLINES AT PAGE 6, LINES 46-57, NMOGA PROPOSED REVISIONS TO THE DEFINITION OF “PRODUCED WATER MANAGEMENT UNIT”. WHY DO YOU RECOMMEND THIS CHANGE TO RESPOND TO NMED’S “PERMANENT PIT” LANGUAGE?

A. The modification was proposed to add permanent pond – to align the definition of permanent pond with pit which was not defined. The goal is to clarify that “pit” and “pond” mean the same thing (20.2.50.7 DD).

Q. IN NMED EXHIBIT 32, MS. BISBEY-KUEHN AND MR. PALMER TESTIFY THAT THEY ARE CONTINUING TO “REVIEW SCIENTIFIC AND TECHNICAL INFORMATION” TO DETERMINE THE BEST CONTROL STRATEGIES FOR PWMUS. AS PART OF THIS REVIEW, SHOULD NMED RECONSIDER HOW IT REGULATES VOC EMISSIONS FROM SALTWATER DISPOSAL FACILITIES? ARE STORAGE VESSELS AT SALTWATER DISPOSAL FACILITIES GENERALLY AN INSIGNIFICANT SOURCE OF VOC EMISSIONS?

A. Yes, I have reviewed information from studies related to emissions from produced water. Based on my review of the information, emissions quantities are directly related to such variables as water quality, water surface area and wind at the water surface. Operators of Salt Water Disposal wells and facilities (SWDs) attempt to retrieve as much residual oil as possible. SWDs that I am familiar with go through separation equipment (e.g. gun barrel) to retrieve residual oil prior to moving to the storage tanks feeding injection pumps, improving the water quality. The facilities I am familiar with use closed top tanks so the water surfaces within the tanks at SWDs are not exposed to wind. Additionally, the surface area is relatively small, related to the size of the tank. The Fort Worth Natural Gas Air Quality Study evaluated emissions at an SWD site. The emissions for VOCs were less than 0.01 ton/year, consistent with theoretical expectations. NMOGA 53 (Pring, Michael, and John Wilhelmi, 2011. Fort Worth Natural Gas Air Quality Study).

Q. IN NMED EXHIBIT 32, PG. 153, LINES 18-21, MS. BISBEY-KUEHN AND MR. PALMER TESTIFY THAT VOC EMISSIONS FROM A PWMU CAN BE REDUCED BY TREATING PRODUCED WATER TO REMOVE HYDROCARBONS BEFORE THE WATER ENTERS THE RECYCLING FACILITY OR IMPOUNDMENT THROUGH THREE-PHASE SEPARATORS AND STORAGE VESSELS. DO YOU AGREE THIS TECHNOLOGY CAN BE USED TO REDUCE EMISSIONS FROM PWMUS? IF SO, CAN YOU DESCRIBE HOW IT WORKS?

A. Three phase separation separates the oil, water, and gas after the fluid is produced from the well. Separation of oil from the produced water will improve the water quality (reducing concentrations of VOCs) and will reduce emissions.

Q. IN NMED EXHIBIT 32, PG. 154, LINES 1-3, MS. BISBEY-KUEHN AND MR. PALMER TESTIFY THAT VOC EMISSIONS FROM ALL PWMUS AFFECTED BY THIS RULE CAN BE REDUCED TO LESS THAN 2 TONS PER YEAR USING THIS TREATMENT TECHNOLOGY. DO YOU AGREE? WHY OR WHY NOT?

A. No. There is uncertainty related to the total emissions from PWMUS because there are many types of systems in use and a wide range of capacities. Systems that process large volumes of water likely have emissions larger than 2 tpy, and I don’t believe the control options NMED referenced (Three-Phase Separators) are capable of reducing emissions below this level in all cases.

Q. ARE YOU KNOWLEDGEABLE ABOUT THE TREATMENT TECHNOLOGIES COMMERCIALY AVAILABLE FOR APPLICATION IN THE PWMU CONTEXT?

A. Yes

Q. ARE YOU AWARE OF ANY CONTROL TECHNOLOGY THAT HAS BEEN SUCCESSFULLY APPLIED THAT WOULD ALLOW ALL PWMUS AFFECTED BY THIS RULE TO MEET THE PROPOSED 2 TPY LIMIT CONSISTENT WITH NMED'S TESTIMONY IN NMED EXHIBIT 32, PG. 154, LINES 1-3?

A. I am not aware of technology that has been successfully applied that would allow all PWMUS to meet the proposed 2 tpy limit. The way to reduce emissions would be related to volumes/rates of treatment. Reducing to very low rates and reducing the size of the facility would reduce emissions. Unfortunately, this would likely make recycling uneconomical/infeasible. As I stated in my initial testimony, there are economies of scale in oilfield water management. To achieve volumes needed for operations, many small systems would be needed to achieve the capacity of a single large system, resulting in more required labor, land impacts, transportation costs, etc.

Q. IN NMED EXHIBIT 32, PG. 154, LINES 21-22, MS. BISBEY-KUEHN AND MR. PALMER TESTIFY THAT NO CAPITAL COSTS WOULD BE REQUIRED TO IMPLEMENT TREATMENT TECHNOLOGY AND MEET THE TWO TONS PER YEAR LIMIT. DO YOU AGREE? WHY OR WHY NOT?

A. I am not aware of three phase separation achieving 2 TPY for any recycling facility and any additional equipment needed to reduce emissions beyond what can be achieved through three phase separation will impact the economics of recycling. Each additional piece of equipment requires capital and operating cost.

By: /s/ Ken Nichols
Ken Nichols