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

**IN THE MATTER OF THE APPLICATIONS OF THE NEW MEXICO OIL AND GAS ASSOCIATION AND THE INDEPENDENT PETROLEUM ASSOCIATION OF NEW MEXICO FOR AMENDMENT OF CERTAIN PROVISIONS OF TITLE 19, CHAPTER 15 OF THE NEW MEXICO ADMINISTRATIVE CODE CONCERNING PITS, CLOSED-LOOP SYSTEMS, BELOW GRADE TANKS, SUMPS AND OTHER ALTERNATIVE METHODS RELATED TO THE FOREGOING AND AMENDING OTHER RULES TO CONFORMING CHANGES, STATEWIDE.**

**CASE NOS. 14784, 14785**

# PRE-HEARING STATEMENT
# FOR THE RE-OPENED HEARING OFJANUARY 9, 2013
# of
# The New Mexico Citizens for Clean Air & Water



NMCCA&W'S REPRESENTATION:

This prehearing statement is submitted by the New Mexico Citizens for Clean Air & Water, Inc. (NMCCA&W), pursuant to Oil Conservation Division Rule 19.15.3 NMAC.

NMCCA&W intends to offer technical testimony by Dr. Neeper and by Dr. Bartlit, and to cross-examine witnesses at the hearing in this matter.

NMCCA&W will appear pro se. NMCCA& W will be represented by Dr. Donald Neeper and by Dr. John Bartlit, who have been duly authorized by NMCCA&W to act as the organization's representatives in this proceeding. *See* Exhibit 1 attached hereto. Cross-examination for NMCCA&W may be conducted by either Dr. Bartlit or Dr. Neeper, depending on the circumstances.

NMCCA&W'S TESTIMONY:

| WITNESS | ESTIMATED TIME OF DIRECT TESTIMONY |
|---|---|
| John R. Bartlit | 5 minutes |
| Donald A. Neeper | 50 minutes |

Dr. Bartlit's qualifications are attached hereto as Exhibit 2.
Dr. Neeper's qualifications are attached hereto as Exhibit 4 (revised).

SYNOPSES OF TESTIMONY:

Donald A. Neeper

Dr. Neeper will review the changes in Table I and Table II as proposed by the applicants, including the proposed test methods. He will present conversion of chloride concentrations as expressed in various units, and the implications of the limits of the four analytes specified in the tables. He will review the conflict of Table II with other sections of the proposed rule.

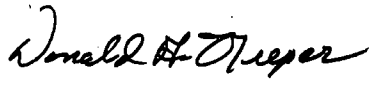
John R. Bartlit

Dr. Bartlit will present implications of the proposed tables for efficiency in regulation.

NMCCA&W'S EXHIBITS:

1 NMCCA&W authorization for Dr. John R. Bartlit and Dr. Donald A. Neeper.
2 Resume of Dr. John R. Bartlit.
4 Resume of Dr. Donald A. Neeper.
6 Dr. Neeper's Powerpoint illustrations for this reopened portion of the hearing.

Respectfully submitted,



Donald A. Neeper
Authorized representative
New Mexico Citizens for
Clean Air & Water
2708 B. Walnut St.
Los Alamos, NM 87544-2050
505-662-4592
dneeper@neeper.net

## CERTIFICATE OF SERVICE

I hereby certify that on or before the second day of January, 2013, I have caused a copy of this pre-hearing statement in Cases 14784 and 14785 to be delivered by hand delivery or by electronic means to the following persons.

Oil Conservation Commission (6 copies)
Florene Davidson, Clerk
1220 South St. Francis Drive
Santa Fe, NM 87505

Gabrielle A. Gerholt, Counsel
Energy, Mineral and Natural Resources Department
1220 South St. Francis Drive
Santa Fe, NM 87505
gabrielle.gerholt@state.nm.us

William H. Carr, Esq.; Adam Rankin, Esq.
Attorneys for Applicant New Mexico Oil & Gas Association
Holland & Hart, LLP
110 North Guadalupe, Suite 1
Santa Fe, New Mexico 87501
wcarr@hollandhart.com, agrankin@hollandhart.com

Judith Calman, Esq.
Attorney for the New Mexico Wilderness Alliance
judy@nmwild.org

Eric D. Jantz, Esq.
Attorney for Oil and Gas Accountability Project
New Mexico Environmental Law Center
1405 Luisa St., Suite 5
Santa Fe, NM 87505
ejantz@nmelc.org

Karin V. Foster, Esq.
Attorney for the Independent Petroleum Association of New Mexico
5805 Mariola Place, NE
Albuquerque, NM 87111
fosterasssociates2005@yahoo.com

James G. Bruce
Attorney for Nearburg Producing Company
PO Box 1056
Santa Fe, New Mexico 87504
jamesbruc@aol.com, jamesbruce@aol.com

Hugh W. Dangler
Attorney for Public Lands of the State of New Mexico
New Mexico State Land Office
PO Box 1148
Santa Fe, New Mexico 87504-1148
hdangler@slo.state.nm.us

Donald A. Neeper

# New Mexico Clean Air & Water Foundation Inc.

P.O. Box 5
Los Alamos
New Mexico 87544



To Whom It May Concern:

The New Mexico Citizens for Clean Air and Water, Inc. authorize Dr. Donald A. Neeper and Dr. John R. Bartlit to speak on behalf of this organization at hearings and meetings before the Oil Conservation Division and hearings and meetings before the Oil Conservation Commission throughout the calendar years 2012 and 2013.

Anne Souders

Anne Souders
Treasurer
NMCCA&W

OFFICIAL SEAL
RONALD V. BLUE
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires 2/5/14

State of New Mexico
County of Los Alamos
The foregoing instrument was acknowledged before me this January 10, 2012 by Anne Souders

Notary

My commission expires : 2/5/14

**Qualifications of John R. Bartlit[#]**
**in Engineering Economics**

**Education:**

- Bachelor of Chemical Engineering, Purdue University, 1956; courses in chemical engineering cost estimation and process engineering economics
- Doctor of Engineering, Yale University, 1963

**Experience:**

- Full-time employee at Los Alamos National Laboratory, 1962-93. Designed, costed, and purchased chemical processing equipment. Managed an engineering project of several million dollars annual budget.

- Citizen participant in numerous environmental regulatory hearings in New Mexico, 1969 to present; includes conducting extensive citizen cross-examination of witnesses, and presenting sworn testimony, subject to cross-examination, that analyzed the economic effects of pollution control requirements for the Four Corners Power Plant.

- U.S. Office of Technology Assessment (OTA), Washington, D.C., member of 15-member industrial panel to study and report on the impact that environment, public safety and health regulations have on the nation's economy, 1975.

- Proposed specific engineering changes to lower the costs of pollution control for a NM coal-fired power plant, a NM computer chip manufacturing plant, and oil and gas operations. The cost-saving ideas were implemented by the public utility and the chip manufacturer.

**Publications re Economic Data and Its Importance:**

1. "Subsystem Cost Data for the Tritium Systems Test Assembly," J. R. Bartlit, J. L. Anderson, and V. G. Rexroth, Proceedings of the 10th Symposium on Fusion Engineering, pp. 1186-92, Philadelphia, Dec. 5-9, 1983, IEEE Cat. No. 83CH1916-6 NPS

2. "Putting Environmental Economics in Perspective: Case Study of Four Corners Power Plant, New Mexico," John R. Bartlit, DChE, Am J Public Health 69:1160-1163, 1979. This is a peer-reviewed publication based on sworn testimony by J. R. Bartlit in "The Public Record of the New Mexico Air Quality Control Regulation Hearing before the Environmental Improvement Board, Regarding AQ Control Reg. 602 and 504, Farmington, NM, August 17-21, 1977," pp. 933-34 and 969-70 in the hearing record

3. "Why Not Cost/Benefit? - A Chemical Engineer / Environmental Advocate Takes a Fresh Look at an Old Issue," John Bartlit, *The Environmental Forum,* publication of the Environmental Law Institute, Vol. 3, No. 4, August 1984, pp. 14-18

# 113 Monte Rey Dr. N, Los Alamos, NM 87544. jrbartlit@aol.com

# QUALIFICATIONS

**Donald A. Neeper**
**(retired, Los Alamos National Laboratory)**
**(retired, Science and Engineering Associates, Inc.)**
**2708 B. Walnut St.**
**Los Alamos, NM 87544-2050**
**Phone: (505) 662-4592**
**Fax: by voice appointment: (505) 662-4592**
email: dneeper@neeper.net

**Education**

B.A. (physics) Pomona College, 1958, magna cum laude.
M.S. (physics) Univ. Wisconsin, 1960.
Ph.D. (low temperature physics) Univ. of Wisconsin, 1964.
Academic honors: Phi Beta Kappa; Pi Mu Epsilon; Sigma Xi.

**Relevant experience**

- 25 years experience in thermal engineering at Los Alamos National Laboratory, including supervision of RCRA Facility Investigation of large waste disposal sites containing hazardous and radioactive wastes.
- Six years part-time experience consulting on vapor extraction and soil remediation.
- Continuing research on vapor transport in soils and passive vapor extraction; authored six publications since 2001.
- Three years' service on the governing board of STRONGER, Inc..

**Continuing research**

Transport of volatile organic compounds and other contaminants in the vadose zone.

**Professional experience**

**2004-12** Guest scientist, Los Alamos National Laboratory.

**2003** Scientist-in-residence, Meadville Theological School, winter quarter.

**1996-2002** Senior Scientist, Science & Engineering Associates, Inc.

**1994-96** Scientist, ERM, Inc.

**1968-94** StaffMember, Group Leader, and Project Leader, Los Alamos National Laboratory.

**AWARDS** Department of Energy Certificate of Appreciation, 1984.
**PATENTS** "Ventilation of Porous Media," U.S. Pat. 5,288,169 (Feb. 22, 1994).
**LICENSES** Commercial pilot; certified flight instructor (expired).

**Professional association**
American Geophysical Union

**Technical publications related to soils**

"Transport by Oscillatory Flow in soils with rate-limited mass transfer 1. Theory," D. A. Neeper and P. Stauffer, *Vadose Zone Journal,* doi:10.2136/vzj2011,0093. (2012).

"Transport by Oscillatory Flow in soils with rate-limited mass transfer 2. Field experiment," D. A. Neeper and P. Stauffer, accepted for publication in the *Vadose Zone Journal,* doi:10.2136/vzj2011.0094, (2012).

"Unidirectional gas flow in soil porosity resulting from barometric pressure cycles," D. A. Neeper and P. Stauffer, *Journal of Contaminant Hydrology* 78, 281-289, 2005.

"Harmonic Analysis of Flow in Open Boreholes due to Barometric Pressure Cycles," D. A. Neeper, *Journal of Contaminant Hydrology* 60, 135-162 (2003).

"Investigation of the Vadose Zone with Barometric Pressure Cycles," D. A. Neeper, *Journal of Contaminant Hydrology* 54, 59-80 (2002).

"A Model of Oscillatory Transport in Granular Soils, with Application to Barometric Pumping and Earth Tides," D. A. Neeper, *Journal of Contaminant Hydrology* 48, 237-252 (2001).

"The Influence of Topography, Stratigraphy, and Barometric Venting on the Hydrology of Unsaturated Bandelier Tuff," D. A. Neeper and R. H. Gilkeson, in The Jemez Mountains Region: New Mexico Geological Society, Forty-Seventh Annual Field Conference, Sept. 25-28, 1996, F. Goff, ed., pp. 427-432.

"Barometric Pumping with a Twist: VOC Containment and Remediation without Boreholes," W. Lowry, D. Neeper, and S. Dunn, Proc. Industry Partnerships to Deploy Environmental Technology, Morgantown WV, Oct. 22-24, 1996. DOE/CONF-9610231-31.

"Frequency Domain Analysis of Subsurface Barometric Flows," D. A. Neeper and S. P. Limback, EOS, Transact. Amer. Geophys. Union 75 (44, Suppl.) p. 264, 1994. Amer. Geophys. Union 1994 Fall meeting, San Francisco CA, Dec. 5-9, 1994.

"Soil Vapor Extraction Enhanced by Oscillatory Flow," D. A. Neeper, Proc. Fifth National Outdoor Action Conf. on Aquifer Restoration, Ground Water Monitoring, and Geophysical Methods, Las Vegas NV, May 13-16, 1991, pp. 75-88.

# PITS AND BELOW-GRADE TANKS

## OIL CONSERVATION COMMISSION HEARING

CASES 14784, 14785 January 9, 2013

Donald A. Neeper, Ph.D.

New Mexico Citizens

for Clean Air & Water

P.O. Box 5 Los Alamos 87544

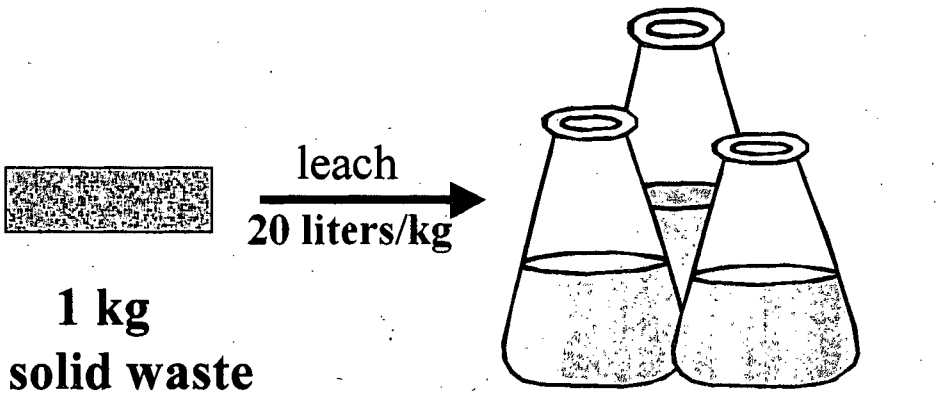
# From the transcript of the Nov. 15, 2012 Commission meeting. pages 4-5

CHAIRMAN BAILEY:

The Commission should have concerns about the numerical limits in the tables that are part of Section 19.15.17.13. These tables use values that are reported as either milligrams per kilogram or milligrams per liter. The table should use one method of reporting for all values, particularly since the Commission is leaning towards use of only one table , rather than two. I recommend that since the measurements are of soils or wastes mixed with soils , that milligrams per kilograms would be a more appropriate method of calculation. However, since the record does not support any conversion of values currently in the proposal, the Commission cannot make such a conversion on its own.

(accents added)

# Conversion between mg/kg solid and mg/liter liquid per EPA 1312 leach test




**Example: 20 mg chloride → 20 mg chloride**

**20 mg/kg 1 mg/liter**

**1 mg/L in leach implies 20 mg/kg in diluted pit waste**

**To convert mg/L to mg/kg, multiply by 20.**

# OTHER UNITS APPEARING IN THE RECORD

**EC** units may be needed in deliberations regarding the tables.

There is no exact conversion from EC (dS/m or mmho/cm) because "EC" is usually measured in a saturated paste of water and soil. The amount of water added to make a paste is inexact, and soil density varies.

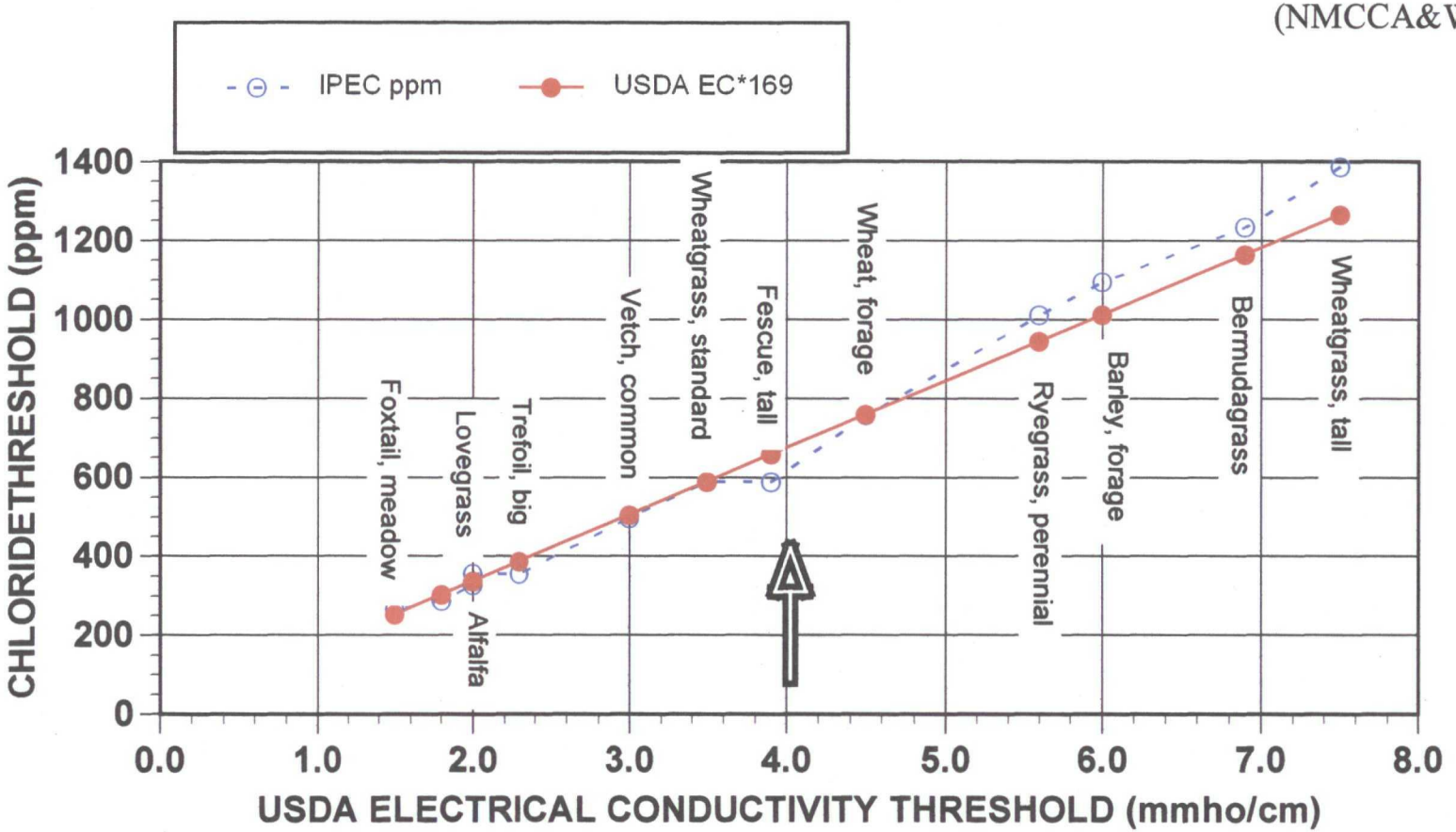
**As an approximation, to convert EC to mg/kg, multiply the EC value by (1010/6), which is 169.**

**Deviation from this linear rule occurs above EC=100.**

Example: EC limit* of alkali sacaton = 12; 12x169 = 2028 mg/kg.

* *tr. pg.* 2314, *l.* 16-21

This approximate conversion is illustrated in page 21 of NMCCA&W Exhibit 5, where EC 6 in a paste corresponds to 1,010 mg/kg in the soil.




Threshold for chloride damage to grasses, expressed as EC of saturated paste by the U.S. Department of Agriculture or as soil chloride content by IPEC. The graph suggests that the two data sets have a common origin.

Chloride: Integrated Petroleum Environmental ConsortiumEC: USDA G. E. Brown Salinity Laboratory, http://www.ussl.ars.usda.gov/pls/caliche/SALTT42B

Table I of NMOGA revision of 11/29/2012

**Table I, 19.15.17.13 NMAC**
**Closure Criteria for Soils Beneath**
**Pits & Below Grade Tanks**

| Depth to Unconfined Groundwater less than 10,000 mg/1 TDS | Constituent | Method | Limit** |
|---|---|---|---|
| ≤50 feet | Chloride | EPA 300.0* | 5,000 mg/kg |
| | TPH (GRO+DRO) | 8015M | 100 mg/kg |
| | BTEX | 8021B or 8015M | 50 mg/kg |
| | Benzene | 8021B or 8015M | 10 mg/kg |
| >50 feet-100 feet | Chloride | EPA 300.0* | 10,000 mg/kg |
| | TPH (GRO+DRO) | 8015M | 1,000 mg/kg |
| | BTEX | 8021B or 8015M | 50 mg/Kg |
| | Benzene | 8021B or 8015M | 10 mg/kg |
| > 100 feet | Chloride | EPA 300.0* | 20,000 mg/kg |
| | TPH (GRO+DRO) | 8015M | 5,000 mg/kg |
| | BTEX | 8021B or 8015M | 50 mg/kg |
| | Benzene | 8021B or 8015M | 10 mg/kg |

* Or other test methods approved by the Division
**Numerical limits or natural background level, whichever is greater

item to note

item revised

# TABLE I

# PROPOSED SOIL CHLORIDE LIMITS

**Conversion to more intuitive units (%)**

| Depth to groundwater | Chloride soils limit (mg/kg) | Limit as NaCl* (%) |
|---|---|---|
| ≦ 50 ft | 5,000 mg/kg | 0.82 % |
| >50-100 ft | 10,000 mg/kg | 1.65 % |
| >100 ft | 20,000 mg/kg | 3.30 % |

*NaCl = Cl * 1.648

Table II of NMOGA revision of 11/29/2012

**Table II, 19.15.17.13 NMAC**
**Closure Criteria for Wastes Left in Place**
**in Temporary Pits & Burial Trenches**

| Depth to Unconfined Groundwater less than 10,000 mg/1 TDS | Constituent | Method | Limit** |
|---|---|---|---|
| 25-50 feet below trench/pit | Chloride | EPA SW-846 Method 1312 (SPLP) and EPA Method 300.0* | 2,500 mg/L |
| | TPH (GRO+DRO) | 8015M | 100 mg/kg |
| | BTEX | 8021B or 8015M | 50 mg/kg |
| | Benzene | 8021B or 8015M | 10 mg/kg |
| > 50 below trench/pit | Chloride | EPA SW-846 Method 1312 (SPLP) and EPA Method 300.0* | 5,000 mg/L |
| | TPH (GRO+DRO) | 8015M | 1,000 mg/kg |
| IPANM < 100 | BTEX | 8021B or 8015M | 50 mg/kg |
| | Benzene | 8021B or 8015M | 10 mg/kg |

* Or other test methods approved by the Division
**Numerical limits or natural background level, whichever is greater

Expressed as mg/kg of diluted waste

50,000 mg/kg

100,000 mg/kg

item to note

item revised

# TABLE II

# PROPOSED WASTE CHLORIDE LIMITS

**Conversion to more intuitive units (%)**

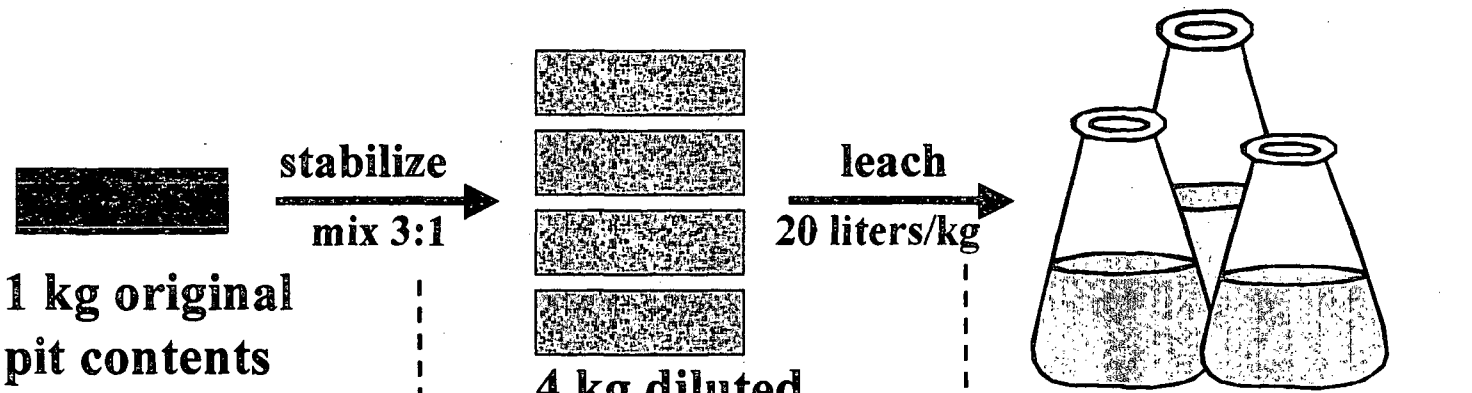
| Depth to groundwater | Chloride waste limit (mg/kg) | Waste limit† as NaCl* (%) |
|---|---|---|
| ≦ 50 ft | 50,000 mg/kg | 8.2 % |
| >50-100 ft | 100,000 mg/kg | 16.5 % |
| >100 ft | IPANM unlimited | |

*NaCl = Cl * 1.648

†Original pit material may contain 4 times the waste limit.

# Where did Table II come from?

To answer, we must compare Table II limits with reality, as indicated by measurements of the original pit contents.




| | | |
|---|---|---|
| **200,000 mg/kg** | **50,000 mg/kg** | **2,500 mg/liter** |
| **200,000 mg Cl** | **200,0000 mg Cl** → | **200,000 mg Cl** |

**The original pit contents may contain up to 4 times the Table II limit.**

# COMPARISON OF TABLE II WITH OCD PIT SAMPLING

| Analyte | Table II | | 10-13 pits sampled, southeast Pit contents before dilution | | |
|---|---|---|---|---|---|
| | Grnd wtr ft | 4xLimit mg/kg | Average mgkg | Maximum mg/kg | Outlier mg/kg |
| GRO+DRO | <50 ft<br>>50 ft | 400<br>4000 | 208 | 515 | 6623 |
| BTEX | all | 200 | 2.68 | 5.21 | 60.3 |
| BENZENE | all | 40 | 130 | 402 | 2710 |
| CHLORIDE | <50 ft<br>>50 ft | 200,000<br>400,000 | 91,757 | 226,000 | no outlier |

**Except for benzene,**
**the diluted wastes are unlikely to approach the limits of Table II.**

# CONFOUNDED RELATION OF TABLE II TO 19.15.17.10 C

## BACKGROUND

A temporary pit may be "offsite" according to the definition of 19.15.17.7 Q. The term, "on-site" has been deleted from the trench specifications in 19.15.17.11 K. Therefore, neither temporary pits nor trenches are necessarily located on-site.

## CONFUSION BY THE TERM "ON-SITE CLOSURE" IN 10 C

The term "on-site closure" in 19.15.17.10 C implies that 10 C applies only "on-site," which is undefined. Setbacks for trenches appear only in 10 C(2). Therefore, although setbacks for pits also appear in 19.15.17.10 A, no setbacks are required for any trench that can be regarded as off-site. Trench burial for wastes within the limits of Table II can therefore be done with no horizontal separation from buildings, surface water, or a floodplain.

# RELATION OF TABLE II TO 19.15.17.10 C(2)

**BACKGROUND**

The proposed 19.15.17.10 C (2) prescribes horizontal setbacks for "on-site closure." It refers to 19.15.17.13, which contains Table II. Setbacks for trenches are established only in 19.15.17.10 C(2).

**CONFLICT DUE TO THE TERM "exceed"**

In 19.15.17.10 C(2), trench setbacks apply only if the wastes exceed the limits of Table II.

The term "exceed" in 19.15.17.10 C(2) should be replaced by "do not exceed." Otherwise, C(2) implies wastes that do not exceed the limits may be buried without setbacks, while wastes that do exceed the limits must be buried according to the setbacks. This contradicts 19.15.17.13 B(8), which prohibits burial of wastes that exceed the limits of Table II.

# CONCLUSIONS

1. Table II as proposed is not responsive to the Commission's request for a single set of units. The proposed chloride concentrations of 2500 and 5000 mg/L are equivalent to 50,000 and 100,000 mg/kg, respectively in diluted waste.

2. The proposed CHLORIDE, GRO+DRO, and BTEX limits of Table II appear to be based on the maximum concentrations that might occur, without relation to environmental protection.

3. The combination of Sub-sections 7 Q, 11 K, and 10 C with Table II provide conflicting interpretations of the permissible geographical locations for waste burials. Literal interpretation allows trench burial without the stated setbacks.