

Brine Application On Roads

Jim Armbruster, OOGM-DEQ

Jeanette Bailey, WRD-DEQ

Janice Heuer, WRD-DEQ

Department of
Environmental Quality
PURE  MICHIGAN

OOGM Responsibilities

- Approving the source well
 - Issue approval letter – yearly
- Part 615 Rule 324.705 – Disposition of Brine
 - Includes all produced brines
- Brine Testing
 - 1980s legal action compromise set the standards
- Brine cannot be used from wells that were hydraulically fractured or produced in association with oil/gas drilling.

Testing Requirements

- Testing Frequency:
 - Yearly – within 90 days of January 1st
- Testing Point:
 - At the storage tank where the brine is first separated from the production stream
- Testing Parameters: BTEX, H₂S, Calcium
- Acceptable Concentrations:
 - BTEX = <1 ppm each
 - H₂S = <20 ppm in gas stream or <500 ppm in brine
 - Calcium = >20,000 ppm (hygroscopic)

Conclusion

- MDEQ-WRD regulates after it is loaded in trucks
- For more brine source information visit the DEQ-OOGM website at:
 - www.michigan.gov/deqoilgasminerals

Brine Application on Roads

Requires a Groundwater Discharge Permit under the Part 31 Rules, Water Resources Protection Act of the NREPA, 1994 PA 451, as amended.

Brine Application on Roads

Brine application is permitted under the Rule 323.2215 General Permit.



**MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
CERTIFICATE OF COVERAGE
UNDER GENERAL PERMIT NO. 2215-15-5**

This Certificate of Coverage (COC) is for **Application of Oil Field Brines** which meet the criteria established for general permits pursuant to the Administrative Rule, R 323.2215, promulgated under Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, being Sections 324.3101 through 324.3119 of the Compiled Laws of Michigan. Failure to comply with the terms and provisions of the General Permit may result in civil and/or criminal penalties as provided in Part 31. This COC does not relieve the discharger from obtaining and complying with any other permits required under local, state, or federal law.

COC No.:

Facility Name:

Facility Address: countywide roads, Michigan

Permittee Name:

Facility Owner Address:

Telephone:

Fax:

COC Issued Date:

General Permit Expiration Date: April 1, 2020

Application Renewal Deadline: October 4, 2019

Discharge Location Description: _____ Township, _____ County, Michigan

Annual Flow:

Treatment Method:

Disposal Method:

This COC supersedes Permit No., or Exemption No., or COC No. issued to this facility on _____.

This COC is based upon the information submitted in the application received by the Department of Environmental Quality (DEQ), and any subsequent amendments.

In accordance with Section 324.3122 of the NREPA, the permittee shall make payment of an annual permit fee to the Department for each December 15 the permit is in effect regardless of occurrence of discharge. The permittee shall submit the fee in response to the Department's annual notice. The fee shall be postmarked by March 1 for notices mailed by January 15. The fee is due no later than 45 days after receiving the notice for notices mailed after January 15.

Rick D. Rusz, Chief, Groundwater Permits Unit
Permits Section - Water Resources Division
Michigan Department of Environmental Quality

Rule 2215 General Permits

Rule 323.2215 General Permits also include authorizations for:

- above ground sanitary sewage
- vehicle wash not open to the public
- meat processing
- gravel and sand mining
- hydrodemolition
- hydrostatic testing water

Rule 2215 General Permit

Authorizes the application of brine for:

- Ice control
- Dust suppression
- Soil & road stabilization

Rule 2215 Permit References

Part 615

Brine must meet the Part 615 requirements including:

Sampling the brine well once a year to confirm it meets legal limits:

Calcium, a minimum of 20,000 mg/l

Benzene, Ethylbenzene, Toluene and Xylene, < than 1,000 ug/l

Other Permit Conditions:

Dust Suppression

Specified:

- application rates
- vehicle restrictions
- equipment requirements

Ice Control

Only for use on paved roads.

Specified:

- application rates
- temperature restrictions
- equipment requirements

Re-authorization of Part 2215 Permits

All Rule 323.2215 permits are due to expire in the spring of 2015.

DEQ is reviewing all the general permits to ensure they are protective of human health and the environment.

The permit for road brining has come under scrutiny due to incidents where road brine exceeding standards was applied to roads.

Benzie Brine Case

- Benzie county sample results:
 - Benzene-28,000 micrograms/liter (ugs)
 - Toluene 1,000,000 ugs
 - Ethylbenzene 150,000 ugs
 - Xylene 750,000 ugs

Benzie Brine Case

- Possible sources of contamination:
 - VOC separation- in storage tank, in truck, dirty containers
 - Maintenance to dissolve paraffin
 - Heater-treater errors
 - Other mistakes (pulling from wrong tank, hauling other material with truck)

Testing project

- Sample at point of use (get rid of the variables)
- Characterize brine in tanks

Brine Sampling

- 13 facilities- 56% of the permitted facilities.
- 25 samples of trucks
- full and nearly empty trucks for BTEX.
- 6 tanks for BTEX and metals.

Results

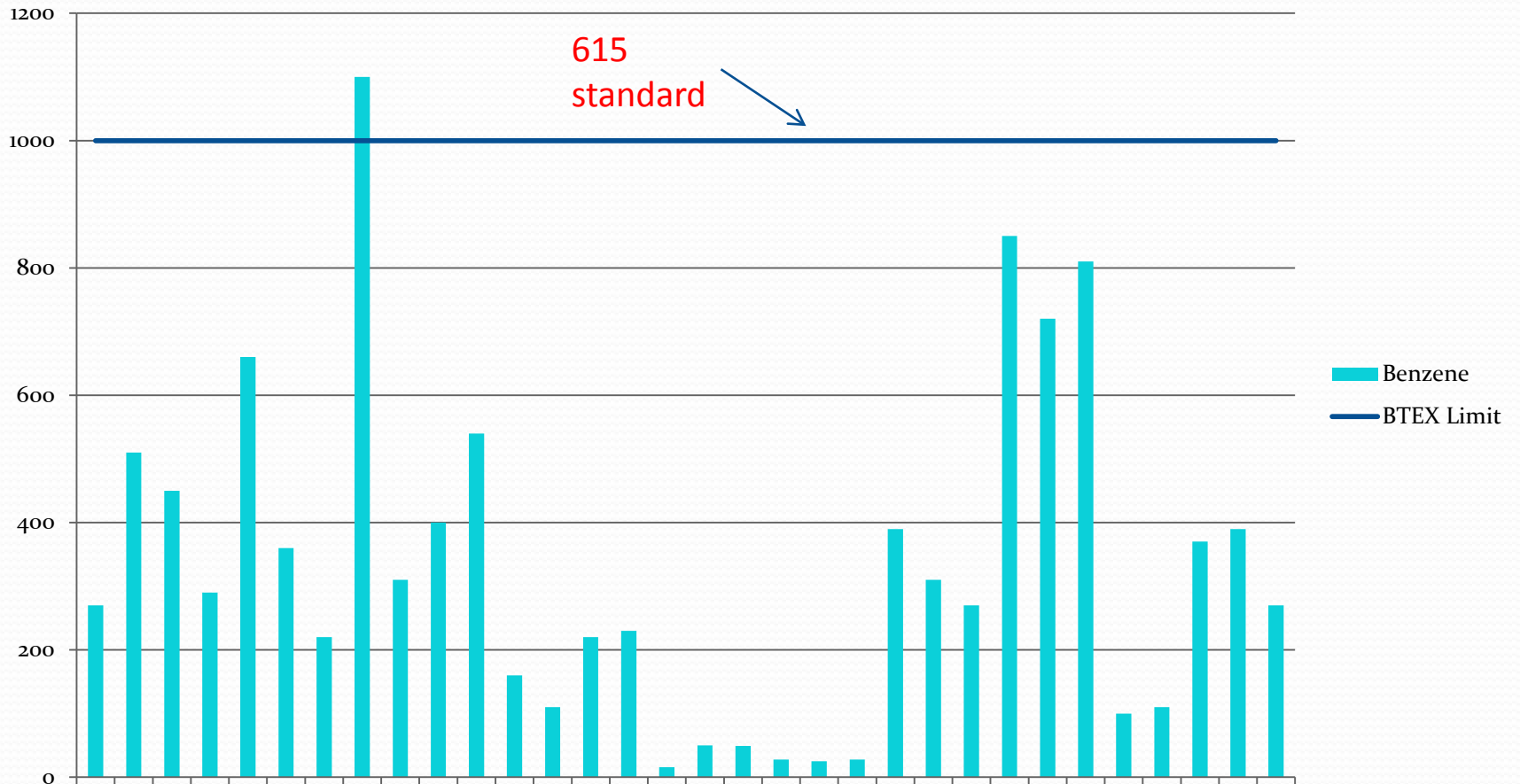
Part 615 standard

- Benzene exceeded the limit 1 time
- Toluene exceeded the limit 3 times
- Xylene exceeded the limit 2 times

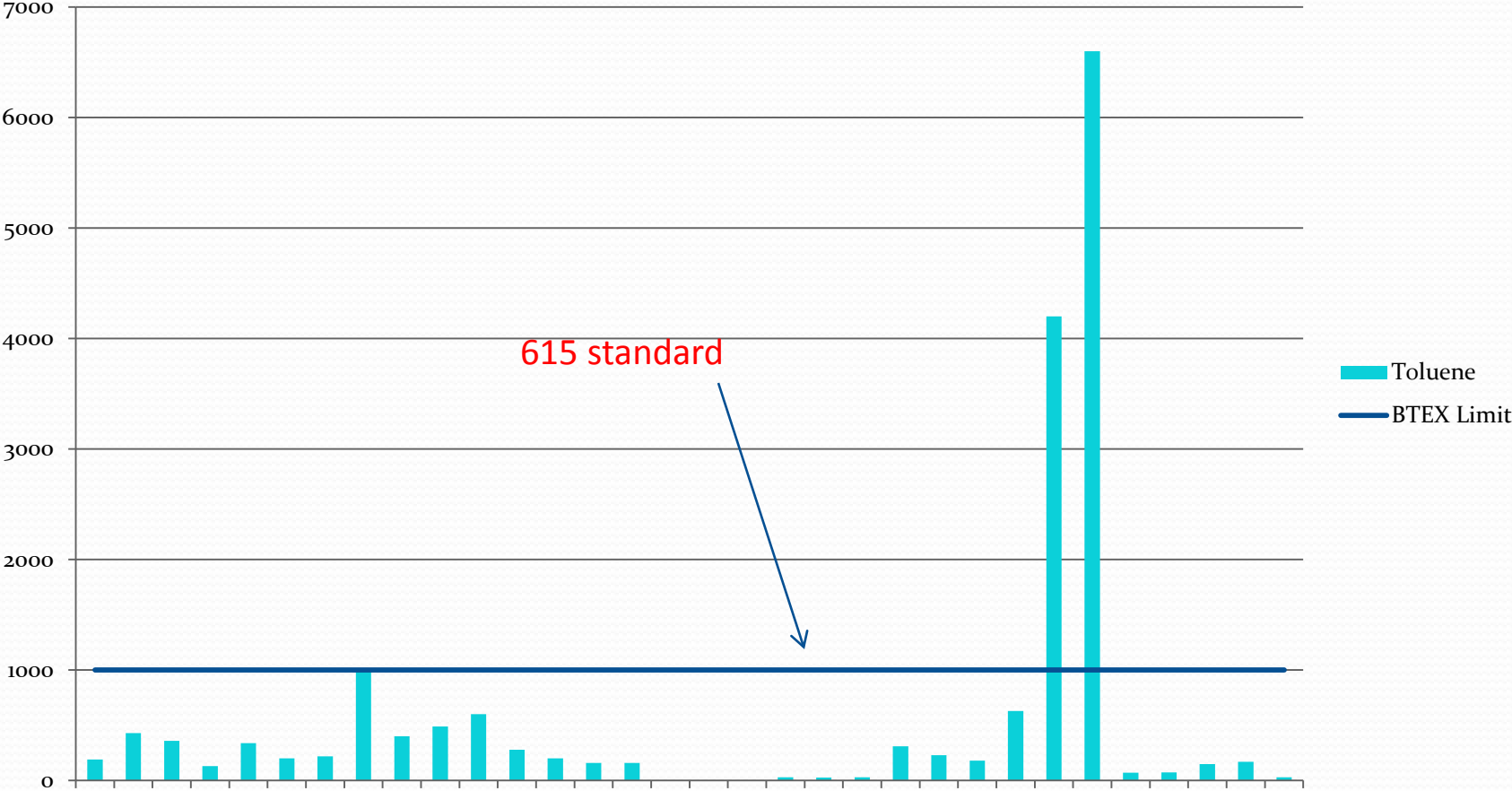
Elevated

- High arsenic, barium, lead, and selenium.
- Detection limit higher than standard for metals
- 1,2,4-trimethylbenzene
- 1,2,3-trimethylbenzene

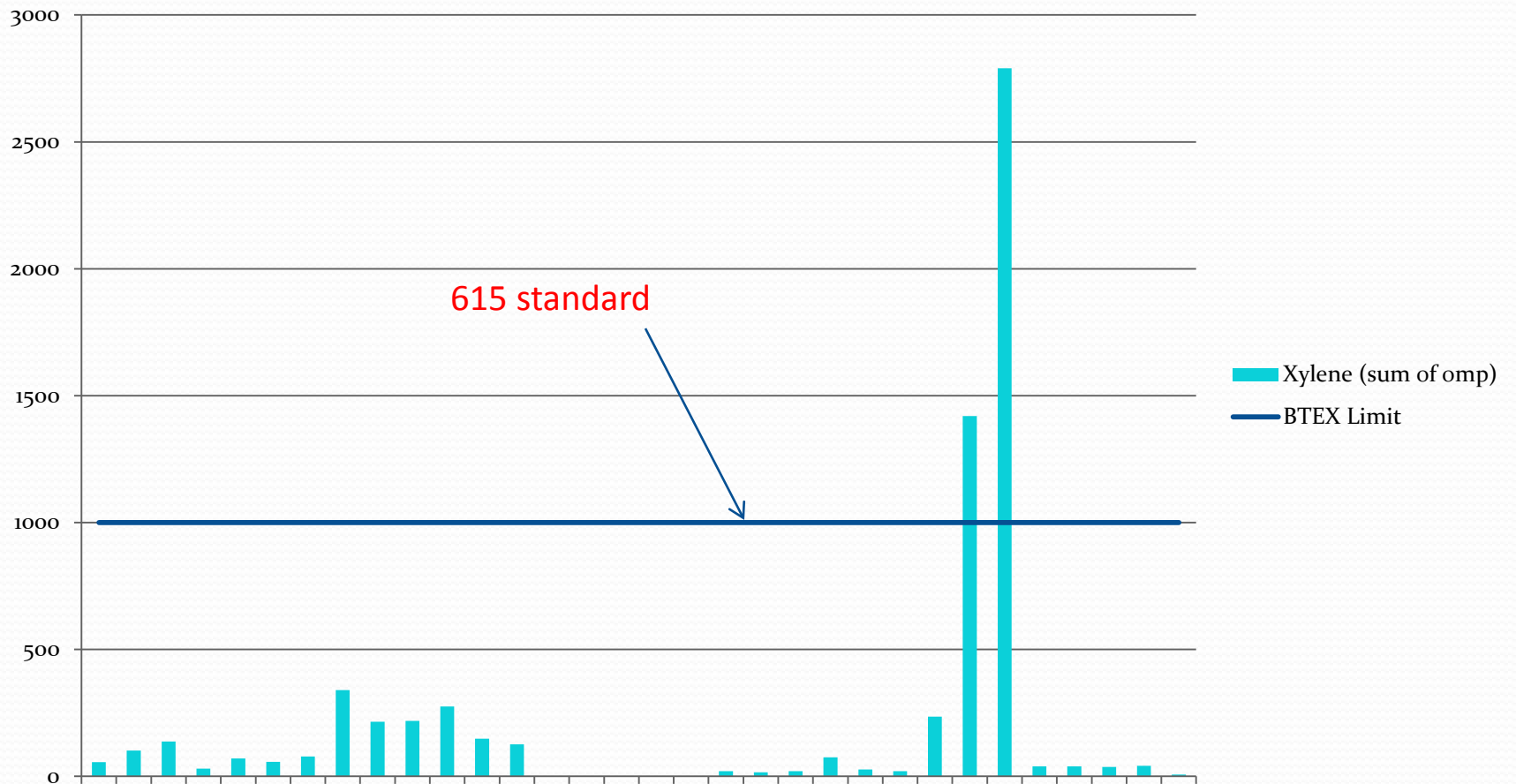
Benzene



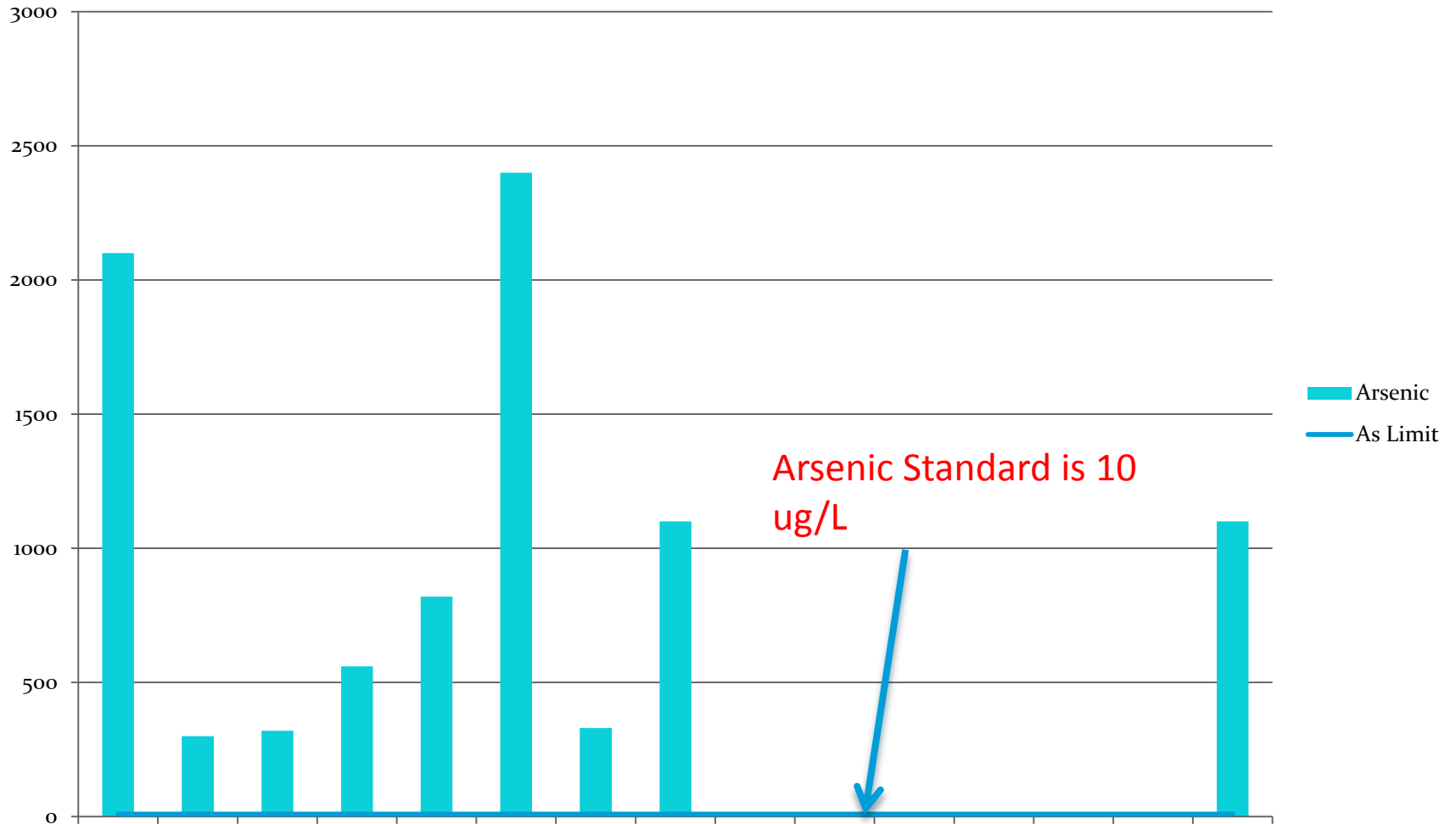
Toluene



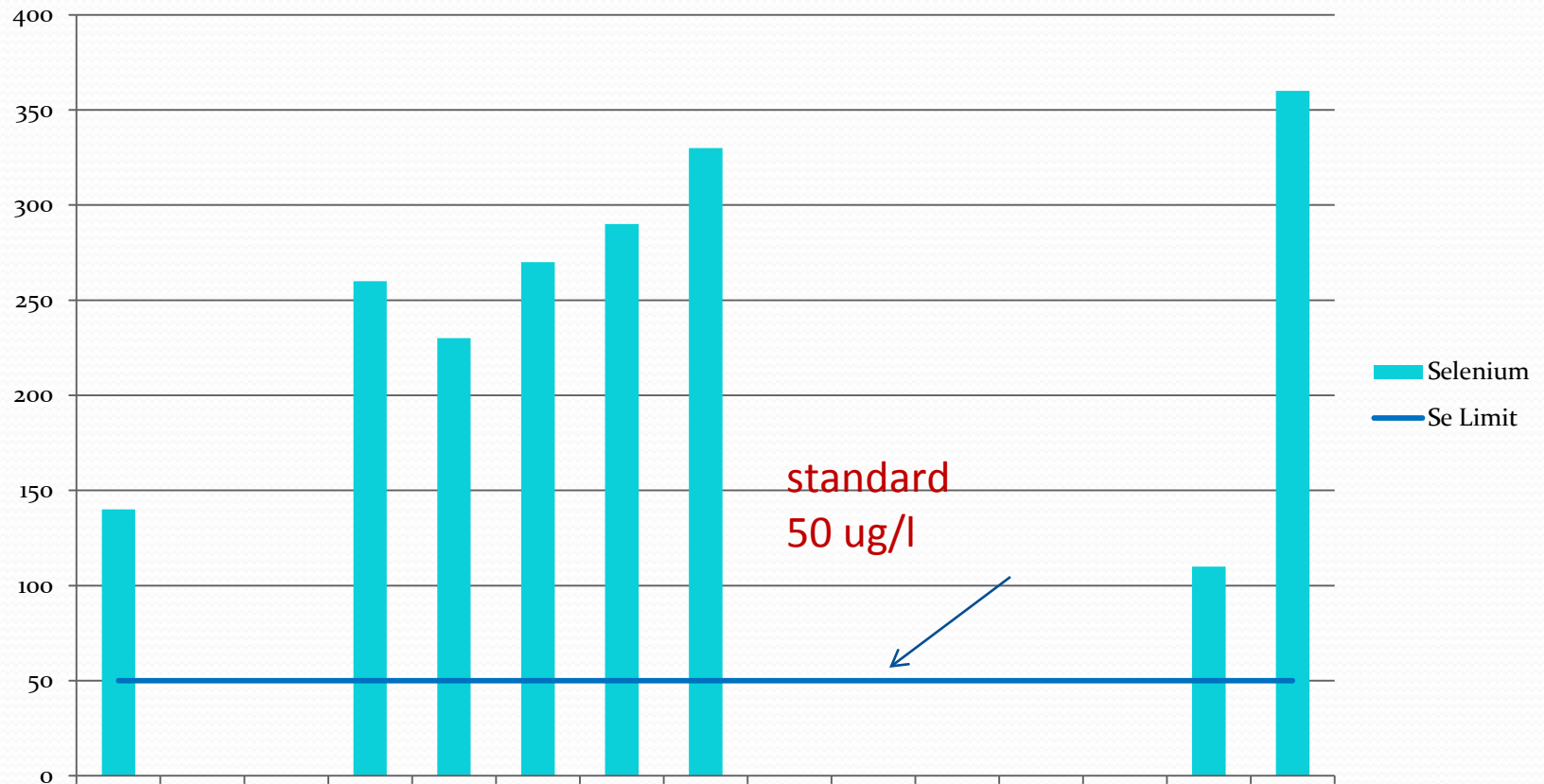
Xylene



Arsenic



Selenium



Current actions

- Review current permit conditions such as sampling protocols
- Improve operational standards
- Reviewed brine application rate for metals
- Suggestions??

Contact us

- Jim Armbruster- armbrusterj@michigan.gov
- Jeanette Bailey- baileyj@michigan.gov
- Janice Heuer- heuerj@michigan.gov
- **Copies of the study at michigan.gov/deq**



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