Environmental Justice Analysis of Montana’s Oil Refineries

Ella Bradley, Maria Kouidi, Anika Cramblet, Stacey Allderdice, Emily Silverthorne, Tamanna Binte Mesbah, Owen Lee

ENST 489S
Outline

1. History of Petroleum in Montana
2. Description of Refineries
3. EJScreen
4. TRI Reports
5. ECHO Violations
6. Local Contact Interview
7. Conclusion & Discussion
8. Citizen Science
Introduction

- Brief History of Petroleum Refining in MT.
  - First refinery built in 1920s
  - Consolidation

- Four Remaining Refineries
  - Par Montana (Lockwood)
  - Phillips 66 (Billings)
  - CHS (Laurel)
  - Calumet (Great Falls)

- Total Capacity (MT DEQ):
  - 211,100 bbl/day
  - 63–70 Million barrels per year
  - Sources of Crude Oil
  - Refined Products
  - Customers

(Environmental Protection Agency, 2023)
Par Montana
(Previously named ExxonMobil)

Billings, MT

- **Barrels produced per day:** 61,500 bpd
- Formally known as ExxonMobil Billings Refinery
- History of violations (Montana Department of Quality 2021)
- Par Pacific donations (Big Sky Economic Development 2023)
Phillips 66
Billings, MT

- **Barrels produced per day:** 67,000 bpd
- Merger of Phillips Petroleum Company and Conoco → Phillips 66
  - Company Rankings
- History of Environmental Concerns
  (Montana Department of Environmental Quality Statement of Basis, 2022)
- History of Community Concerns
  (Billings Beat: abc FOX News, 2022)
CHS Inc.
Laurel, MT

- **Barrels produced per day:** 59,600 bpd
- Owns Cenex Pipeline LLC and Front Range Crude Line
- Multiple WET failures
Calumet Specialty Products Partners, L.P.

Great Falls, MT

- **Barrels produced per day:** 30,000 bpd
- **Established in 1919**
  - Fuels, rubbing oils, waxes, chemicals, and other items related to fuels
- Shows environmental concern but historical emissions show otherwise
- Locals have expressed concerns about environmental and health impacts
- Little Shell Tribe of Chippewa (Landless Indians)
  - Potential environmental injustices due to health impacts caused from the refinery

(Environmental Protection Agency, 2023)
Calumet Specialty Products Partners, L.P., Great Falls, MT

Resource Conservation and Recovering Act (RCRA) Calumet Facility Investigation
- Fact Sheet made in August 2023
- Public Meeting in October 2023

Letter of Direction from MDEQ for a Facility Investigation (RFI)
- Phase 1: this fall 2023
- Phase 2: spring 2025

Baseline Risk Assessment
- Summer 2025
- Data collected will be used to cover human health and ecological assessments

(Environmental Protection Agency, 2023)
Found Annual Production by Multiplying Barrels-Per-Day by 365
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<td>Traffic Proximity (daily traffic count/distance from road)</td>
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*RMP refers to a Risk Management Plan. A RMP Facility is a facility that must submit documents describing its risk management plan to the EPA.*
Par Montana Toxic Release Inventory Reports (TRI)

Total Number of lbs released from 1987-2022:

11,375,835 lbs

RSEI Scores

- Benzene 1,533
- 1,3-Butadiene 705
- Nickel 491
Phillips 66 Toxic Release Inventory Reports (TRI)

Total number of lbs released from 1987-2022:

7,781,776

RSEI Scores

- Chromium 7,652
- 1,3-Butadiene 7,152
- Benzene 3,449
Calumet Toxic Release Inventory Reports (TRI)

- Total Number of Lbs Released from 1987-2022: 3,176,156.14 lbs.

RSEI Scores:
- Benzene 4,230
- Naphthalene 404
- Ethylbenzene 71
CHS Inc. Laurel Toxic Release Inventory Reports (TRI)

- Total number of Lbs released from 1987-2022: 7,336,526.22 lbs.

RSEI Scores:
- Benzene 448
- Nickel 287
- 1,3 Butadiene 240
Pattern: Detrimental Respiratory Health Effects

- RSEI Scores:

Phillips 66: No standard for scores, but Phillips 66 has chemical scores that are exponentially larger than other 3 refineries.

Chemical Releases
Majority of chemicals with over 500,000 lbs. releases have detrimental respiratory health impacts (asthma, inflammation of lungs, respiratory failure, etc):

1. Sulfuric acid
2. Ammonia
3. Toluene
4. Propylene
5. Aluminum Oxide
6. Xylene
7. Hydrochloric Acid
# Reports & Findings - ECHO Report

## CHS Inc. Laurel Refinery

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<tr>
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<th>Compliance Monitoring Activities (5 years)</th>
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(Environmental Protection Agency, 2023)
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Local Contact in Great Falls - Interview with Teresa Shiner

- **Background:**
  - Local of Great Falls
  - Nurse Educator at Montana State University’s pediatric center
  - Emergency room at Great Falls
  - RN at Hospice Department
- “Constant Burning Flame” from Calumet refinery
- River’s Edge Trail
- Community Practice Drills
  - Potential risks
Summary & Conclusions

- Air pollutants and asthma
- Phillips 66 was the poorest area with the worst health and environmental indicators
- Community mobilization
Recommendations For the Community

Bucket Brigade citizen air monitoring

- Sniffers: Once they catch a whiff of something suspicious, they sound the alarm.

- Samplers: They write down everything important and make calls to send the air to the lab for checking.

- Coordinator: He is the only individual to change the bags in the bucket and send the samples to the lab.
References

Billings Beat. (2022, September 8). *City of Billings asks Phillips 66 to investigate odor concerns.*


“RCRA Facility Investigation.” *RCRA Facility Investigation, Calumet Montana Refining, LLC Fact Sheet,* Aug. 2023,

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River’s Edge History Tour | City of Great Falls Montana. greatfallsmt.net/planning/river%E2%80%99s-edge-history-tour.


“Refinery Activities May Cause ‘Additional Flaring and Noise.’” (2023, March 7). KRTV NEWS Great Falls,


Thank you for being here!

Any Questions?