

April 7 , 2021

Dear State Legislators:

I wanted to expand on some written testimony to support my oral testimony to the house committee on environment and natural resources on Thursday 4/8 regarding house Bill 5923. Below, starting in the next paragraph, is a letter I originally sent to the DEM last month. In preparation I did endless hours of research on the pyrolysis process, current operations in the U.S and abroad, and tried to extract the data to the best of my knowledge. Although this letter was written regarding the Medrecycler-RI plant in West Warwick, I firmly believe that these types of pyrolysis facilities should be banned from our state for the time being. I hope you have time to look this over and come to your own conclusions.

As a Rhode Island resident for the last 18 years, I would like to voice some concerning environmental issues with regards to the solid waste permit proposed for the pyrolysis facility being proposed by Medrecycler-RI in West Warwick. In the proceeding paragraphs you will find a compilation of material on this particular project, other pyrolysis plants, and various EPA summaries. The first few paragraphs include mostly research on the project to be followed by my personal opinion and references.

The proposed pyrolysis plant would be located on 1600 Division Road in West Warwick in a suburban location. The population of the 3 towns (West Warwick, Warwick, and East Greenwich) adjacent to the facility totals roughly 123,000 which is 12% of the state's population). The facility is less than 750 feet from a preschool, $\frac{3}{4}$ a mile from New England Tech College, and 3.5 miles from Narragansett bay. The prevalent wind direction from the facility is south, southwest blowing toward Warwick, Cranston, west bay, and the upper bay.

The proposed facility would process 43 million pounds of medical waste yearly from various Northeast states via interstate 95. Most of the waste would be imported from out of our state. Based on the company's proposal, the following can be expected with regard to gas emissions. 41 million lbs. of carbon dioxide a year (about 4,000 cars worth), 4.8 million lbs of argon, and among other emissions a small but measurable amount of hydrogen chloride, sulfur dioxide, nitrogen dioxide gases. This is all per the Medrecycler-RI application.¹ Also, based on the Medrecycler-RI proposal, emissions are below air toxics and therefore an Air Quality Impact Study (AQIS) is not necessary.¹

There are currently zero pyrolysis plants in the United States operating that dispose of medical waste.² An EPA report in December of 2020 reports 15 pyrolysis plants in the U.S. currently.² Several of these are not operating for various reasons including lack of profitability and/or lawsuits.² Although slow pyrolysis has been around for a long time, the use of fast pyrolysis to convert municipal waste to bio-oil and syngas is relatively new. A 2012 EPA report of operating pyrolysis technology showed only a handful of operating companies using the technology.³ Of note at that time Agilyx in Tigard, Oregon and JBI in Niagra Falls, New York showed air emission data recording volatile organic compounds (VOCs), hydrocarbons, and carbon monoxide (CO) emissions.³

With regard to bio-oil, the chief product of pyrolysis, the 2006 EPA review reports "More than 300 specific compounds have been identified in biomass pyrolysis oil and some of these compounds are known carcinogens such as benzene and phenathene."⁴ "The low pH of

these oils, however, would obviously have detrimental effects on aquaculture in the event of a large spill in a river, lake, or stream.”⁴ “Public acceptance or perception may be an issue, particularly if the health and safety issues are unknown. Odor is another issue related to public acceptance. Bio-oil has a strong smoky smell that is unlikely to be masked by other compounds.”⁴

A significant amount of this plastic used in medicine and placed in medical waste bins is PVC based. Polyvinylchloride (PVCs) has the molecular structure C_2H_3Cl . Per the EPA report published in December 2020, “PVC plastic typology produces hazardous chlorine gas in both thermal and catalytic pyrolysis application....PVC also contains dioxin-producing chlorides and can lead to the formation and emission of hydrochloric acid (HCL)”²

So I have some grave concerns about this plant and horrible implications it could have environmentally based on the data above:

1. Potential HAZMAT clean up and exposure if any trucks involved in accidents carrying 43 million pounds of medical waste through the state a year.
2. Argon gas settling to ground level near the preschool. Argon is colorless, tasteless, and inert. However, it is a heavy gas and sinks in the air column displacing oxygen and can cause asphyxiation.
3. The company feels an Air quality impact study is not necessary (remember this will be the only facility of its kind in the U.S. to pyrolyze medical waste)
4. Potential smell of hydrogen sulfide (rotten eggs) which can be tasted and smelled at 0.3 parts per million. Based on prevailing winds would flow toward Warwick and the west bay.
5. Potential air discoloration with nitrogen dioxide in the air (the chemical that responsible for the red/orange tinge over southern California.
6. The risk of hydrogen chloride gas being released and settling in the bay turning into hydrochloric acid affecting the shell fishing industry and the estuaries in the western part of the bay
7. Risk of bio-oil with carcinogens from a large spill getting into the bay via sewers/drains which empty into rivers leading into the bay.
8. The risk of PVC plastic C_2H_3Cl going through pyrolysis. There is no mention of it in throughput that I could find on the application.¹
9. My most significant concern is about the health, safety, and welfare of the facility employees and general public with regard to the shredding of medical waste and aerosolized pathogens. I am an ER physician and I contribute to medical waste on a daily basis. On an average work day I am placing COVID laden gowns, blood soaked gauze, body fluids loaded with MRSA bacteria, and dead body tissues in our medical waste bags. Are there even protocols to check the safety of shredding this material near such a populated area?

There are so many red flags with this project, but really the biggest is location. This is the type of facility that should be in both a heavy industrialized zone and a remote zone away from important bodies of water and population. The new technology, the fact that it will be the only one of its kind in the U.S., the potential smell of the emissions, and the unlikely but potential incidence of a factory malfunction causing a bio-oil leak with proximity to the bay are additional red flags. I would hope the DEM use some common sense, the data presented above, and then scrap this albatross altogether. We are too densely populated to have a facility like this anywhere in the state. Thank you for your consideration of this letter.

Sincerely,

Joshua Jarbeau MD

REFERENCES

1. Pyrolysis and Energy Production Medical Solid Waste Treatment facility application. Medrecycler-RI Revision 9 July 2020 <http://dem.ri.gov/programs/benviron/waste/pn/pn-medrecycler-rev.pdf>
2. Assessment of Municipal Solid Waste Energy Recovery Technologies. United States EPA. Dec. 2020
https://cfpub.epa.gov/si/si_public_record_Report.cfm?dirEntryId=350673&Lab=CESER
3. State of Practice for Emerging Waste Conversion Technologies. United States Environmental Protection Agency. 2012
<https://nepis.epa.gov/Exe/ZyPDF.cgi/P100FBUS.PDF?Dockey=P100FBUS.PDF>
4. Large-Scale Pyrolysis Oil Production: A Technology Assessment and Economic Analysis. National Renewable Energy Laboratory M. Ringer, V. Putsche and J. Scahill 2006
<https://www.nrel.gov/docs/fy07osti/37779.pdf>

