

Water Impacts & Water-Related Air Quality Impacts from the Proposed Pioneer Renewable Energy Power Plant (PRE)

The PRE power plant will be the largest industrial water user in Greenfield. This is because it will run at approximately 23% energy efficiency, with about 77% of the energy from the burning of fuel being lost as waste heat. At a time of heightened awareness of the need for energy conservation, this intentional inefficiency is appalling, unacceptable, and should be illegal. The vast quantities of "waste heat" generated from burning a ton-a-minute of wood will be disposed of by a process called "wet cooling" which will essentially boil off and evaporate water into the local ground-level air. The facility will need about 700,000 gallons of water every day, and close to a million gallons of water will be used daily during the hot summer months. Most of the water being vaporized into our air will come from installing a new pipeline and pumping partially-treated sewage wastewater through the town from Greenfield's Water Pollution Control Plant down by the golf course on Deerfield Street.

Greenfield's sewage treatment process is considered to provide "partial treatment" because it only removes gross contaminants (called secondary biological treatment) and is not designed to, nor able to remove most toxic chemicals, especially over-the-counter drugs, personal care products, and synthetic pollutants like pesticides. Many of the pharmaceuticals used at Franklin Medical Center (anti-microbials, antibiotics, chemotherapy drugs, heart medications, artificial sweeteners, etc.) and most of the other compounds on an EPA list of over 87,000 suspected Endocrine Disrupting Compounds (EDCs) can pass right through the sewage treatment process. In fact, the town is not even required to monitor for these dangerous pollutants. EDCs have been shown by extensive scientific research to cause biological abnormalities in aquatic life, such as birth defects, chromosomal damage, reproductive abnormalities, inter-sex development (females with sperm, males with eggs), and a host of other un-natural and unpleasant anomalies.

Instead of discharging this contaminated sewage effluent to the Deerfield River, where it is likely having an adverse impact on aquatic life, the Town of Greenfield has given approval to the developer to pump this toxic stew 5 1/2 miles north through the center of town to be boiled away in his super-inefficient power plant. Close to 3/4 of a million gallons of contaminated sewage water will be entering the ground-level air of Greenfield every day. Anything and everything dumped down a drain or flushed down a toilet will potentially be aerosolized for the population to inhale. No studies were done to determine how much of the toxic chemicals in the sewage water will be deposited on the citizens who breathe the air. No testing was done for EDCs to calculate how much exposure the local population will be

subjected to. Modern pharmaceuticals are developed and designed to have important biological effects at extremely low doses. Many Endocrine Disrupters have documented biological effects at concentrations as low as a few parts-per-trillion. None of the thousands of suspect compounds have been studied to determine what damage they cause in various combinations, so-called synergistic effects. To use the population of Greenfield, Turners Falls, Gill and surrounding towns as Guinea Pigs for this "chemical exposure experiment" is unethical and unconscionable.

It is important to understand that this contaminant plume will not be dispersed through the 250 foot high incinerator smoke stack, but will instead be spewed out essentially at ground level. The applicant has stated, in public and on the record (MEPA hearing, 4/8/09, Greenfield), that only "100% pure water vapor" will be discharged from the cooling towers, even though they will be using reclaimed sewage effluent for wet cooling. From the applicant's 2482/ENF/Appendix B, page B-41 (Air Quality): "A cooling tower system as described above will dissipate heat by evaporating water and discharging the water vapor into the atmosphere. This water vapor is 100 percent pure water." This statement is either intentionally misleading or is an outright lie.

In order to meet state water re-use standards, the partially-treated sewage water will have to receive additional treatment at the incinerator to reduce the "food value" (called biochemical oxygen demand or BOD) of the leftover sewage particles (referred to as total suspended solids or TSS). However, this additional treatment process is not designed to, and will not remove the synthetic chemicals, drugs, personal care product residues, pharmaceuticals, and other EDCs in the sewage water. Additional chemicals will then be added to the cooling water such as slime-control chemicals, chlorine disinfectants, corrosion inhibitors, and process control chemicals. Extensive monitoring of existing cooling towers at other power plants have shown that they can cause bacteria and other micro-organisms, dissolved minerals, volatile organic compounds (VOCs), chlorination by-products, chemical residues used for water treatment, slime control chemicals, corrosion inhibitor residues, volatile process control lubricants, and many other toxic materials to be discharged to the local ground-level air. A certain percentage of this discharge is composed of small droplets called "drift" that can contain concentrated toxin levels (chemical fog) which will either be inhaled or deposited in a fall-out zone close to the facility. None of this was disclosed to the public by the applicant during the permitting process.

The following quotes about pharmaceuticals and personal care products are from testimony by MassDEP Commissioner Laurie Burt before the Joint Committee on Public Health, Tuesday, May 13, 2008

[<http://www.mass.gov/dep/toxics/stypes/burtppcp.pdf>]. Commissioner Burt's testimony focused on the threat that Pharmaceuticals, Personal Care Products, Endocrine Disrupting Compounds, and other Persistent Organic Pollutants pose when they are present in water supplies, but many of her comments are directly applicable to PRE's proposal to evaporate and volatilize contaminated sewage effluent into the ground-level air of Greenfield, Turners Falls, Gill and surrounding towns.

"...the potential effects from acute and continuous low-dose chronic exposure to these compounds in humans have not been well studied and therefore warrant caution."

"...there are no state or federal drinking, ground or surface water regulations regarding pharmaceuticals and personal care products and no requirements to test for these compounds."

"... we need a better understanding of the sources, fate and transport of these compounds to better target reduction strategies and treatment strategies, as well as get a better understanding of the potential exposures to humans and our ecosystems."

"In summary, pharmaceuticals and personal care products in the environment are a national issue demanding a national response."

In light of the above comments from the DEP Commissioner, the cavalier attitude shown by the Greenfield ZBA and the DPW Director concerning the constant inhalation of EDCs and other toxic compounds that are likely to be in the contaminated sewage water is most reprehensible.

In addition to using contaminated sewage water, the PRE facility proposal calls for using an on-site drilled well for supplying higher-quality water needs and also tapping into Greenfield's municipal water system. During summer months, when temperature and humidity levels make the wet-cooling process less efficient thus requiring more water, it is also coincidentally when the lowest sewage flows occur in town, resulting in a projected shortfall of contaminated sewage water for cooling. This gap in water need will be filled by using up to 400,000 gallons per day of water from the municipal public water supply system (town drinking water). How will this impact the municipal water supply? How much of Greenfield's drinking water will actually be used?

The plant will also be discharging over 120,000 gallons per day of highly concentrated industrial wastewater to the Greenfield sewer system. This industrial

waste will be composed of so-called "blow down" water left over from the wet-cooling process as well as ash-quenching liquid and other process waste. During the summer months, when sewage flows are lowest and water needs are highest, 100 % of the towns sewage flow will be continuously recycled through the incinerator. Each pass through the cooling system will concentrate the minerals and other materials dissolved in the water. Other industrial cooling systems, similar to the PRE incinerator, have produced wastewater so concentrated that it has resulted in the upset of the biological systems at the sewage treatment plants, requiring that the industrial waste must by-pass the biological process and be discharged directly into the river without any treatment. If this happens as a result of the PRE incinerator's toxic discharges, and there is no sewage flow available to recycle, then 100% of the water needs for wet-cooling will have to be supplied by the municipal drinking water system. That means over 900,000 gallons of water per day, or about half of what the City of Greenfield can produce will be consumed by the incinerator.

The PRE power plant proposal was improperly reviewed by totally unqualified individuals. The above issues were never addressed during the public participation process. It is unlikely that anyone on the ZBA had even the most basic understanding of the complex scientific questions that were raised. The details of water usage by the plant were not disclosed during permitting but only referred to as being under negotiation. Thus, the approval process by the town was severely flawed. It is truly questionable whether the water needs of the proposed plant are supportable. It is obvious that many questions remain unanswered and un-addressed. It is likewise clear that the people of Greenfield, Turners Falls, Gill and surrounding towns will be subjected to a constant barrage of contamination from the PRE facility.