

# The Wheelabrator Incinerator in Claremont, NH A Working on Waste Report – Fall 2011

## Summary Statement

The Wheelabrator incinerator on Grissom Lane in Claremont is the city's largest stationary source of air pollution. For residents of Claremont and surrounding communities, the incinerator increases the risk of exposure to dioxin, mercury, lead, and other toxic chemicals. In 2006, thirty-five local health care professionals called for closure of the incinerator, citing unacceptable and unnecessary health risks for area residents.

This report provides general information about waste incineration as well as data specific to the Claremont incinerator. The report explains why emission standards adopted by the Department of Environmental Services (DES) are not health-based. The report also provides a detailed action plan for the transition to a recycling-based system in Claremont and surrounding communities.

Of special note:

*Appendix 1:* Dr. Jonathan Levy's peer review of the draft DES air quality report for Claremont  
*Appendix 2:* Antioch New England Institute's recycling-based action plan for Sullivan County

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Contact: Working on Waste, PO Box 641, Claremont, NH 03743 [dls6@tds.net](mailto:dls6@tds.net)

## A History of Controversy

The Wheelabrator incinerator in Claremont is located on Grissom Lane near the Charlestown line. The incinerator began operating in 1987 amid controversy and concern about pollution and about financial entanglements with Wheelabrator. These concerns remain today.

During the twenty years of an unpopular put-or-pay incinerator contract, the New Hampshire/Vermont Solid Waste Project (Project) was Wheelabrator's public face. The Project was comprised of two members: the Southern Windsor/Windham Counties Solid Waste Management District in Vermont and the Sullivan County Regional Refuse Disposal District in New Hampshire. There were 14 communities in the Vermont district and 15 communities in the New Hampshire district.<sup>1</sup> Each district had its own contract with Wheelabrator. Because the contracts were essentially the same, they are referenced below as "the contract."

The contract did not go to a public vote, despite ensuring payment to Wheelabrator even if trash was not delivered to the incinerator. Vermont Attorney Dinah Yessne said the lack of a public vote allowed "just what our voter approval provisions are meant to prohibit: the burdening of future taxpayers without prior approval" (22).

A Vermont legislative report on solid waste listed the disposal contract as one reason for the "depth of unrest" in Claremont and surrounding communities, the other reasons being incinerator pollution, the ash landfill in Newport, and the lack of public access to meetings and documents (Huffman, Boright, and Winchester Appendix E, 1-12).

With an onerous contract and one of the highest disposal fees in the country, the Project came under scrutiny. Jeff Bailey of *The Wall Street Journal* described the Project as being in a "death spiral" (1), and Vermont State Auditor Edward Flanagan said the Project "squandered public funds in a habitual pattern of stealth, disorganization and irresponsibility" (1).

The Wheelabrator disposal contract expired on July 1, 2007. The Project also dissolved that year, following a Project vote to end the Cooperative Agreement between the two districts (Meyers 2).

There was another controversial contract in effect during the years of the waste disposal agreement with Wheelabrator. The incinerator generates electricity that Wheelabrator sells to a utility. From 1987 to 2007, a long-term Power Purchase Agreement (PPA), first with Connecticut Valley Electric Company (CVEC) and then with Public Service Company of New Hampshire (PSNH), allowed Wheelabrator to sell electricity at about twice the prevailing regional market rate.

Wheelabrator buys electricity from the utility in order to operate the incinerator and then sells

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<sup>1</sup> The Sullivan County waste district did not include three Sullivan County communities: Charlestown, Unity, and Washington. The district did include three communities that are not in Sullivan County: Center Harbor, Meredith, and New London.

back to the utility the electricity generated by burning waste. When the PPA was in effect, Wheelabrator charged the utility the high price for the full output of the incinerator, instead of charging the high price only for the net amount that was available after deducting what was used to operate the incinerator.

In March 2002, the New Hampshire Public Utilities Commission (PUC) ruled that ratepayers were overcharged during the 15 years the incinerator had operated and a refund was due (68).

Wheelabrator and CVEC opposed the PUC ruling and instead put forth a Stipulation of Settlement. The PUC approved the stipulated settlement in May 2003 as part of the PSNH buy-out of CVEC (51).

The settlement whittled a potential \$12,000,000 refund down to \$835,000. It also allowed Wheelabrator to continue selling the incinerator's full electric output at unreasonably high rates until 2007, when the PPA expired (*Working on Waste, Preliminary Position Statement*, 2).

PSNH now pays Wheelabrator "the market-clearing price" for electricity generated at the incinerator (Rohnstock).

## **Burning Household Trash, Special Waste, and Pharmaceuticals: The Risks of Incineration**

Although free of long-term commitments to Wheelabrator, residents of Claremont and surrounding communities continue to be at an increased risk of exposure to pollution from the incinerator. The discussion below explains why this is unnecessary and unacceptable.

Wheelabrator's *2010 Annual Facility Report* to DES indicates the Claremont incinerator burned 73,085 tons of waste that year, with Keene the largest single contributor at 23,591 tons. Table 1 shows tonnages for New Hampshire and for other states using the incinerator in 2010 (3, 5).

The incinerator in Claremont burns more than regular household trash. Following a complaint to the Claremont City Manager from a former Wheelabrator employee, John LaRiviere of Wheelabrator acknowledged the incinerator burns special waste, giving as an example pirated Gucci handbags seized by the United States Customs and Border Patrol. Mr. LaRiviere also said the incinerator accepts "limited quantities of non-regulated, non-hazardous consumer-packaged pharmaceuticals" (*To David Cribbie*, 3).

Burning waste is dangerous. Incinerators emit toxic chemicals in a form that can be easily inhaled and ingested, thereby increasing exposure risks. These chemicals are in both air emissions and ash and include persistent toxic substances such as lead, mercury, and dioxin. Persistent toxic substances accumulate in the human body and in the environment and cause harm in low doses. Zero is the only safe emission standard for these dangerous chemicals. The British Society for Ecological Medicine states "the hazards of incineration are becoming more obvious and more difficult to ignore" (1).

**Table 1: New Hampshire and Out-of-State Tonnage Sent to Wheelabrator Incinerator in Claremont, 2010**

<b>IN STATE</b>	<b>TONNAGE</b>
Acworth	228
Alstead	1033
Charlestown	1182
Claremont	9686
Cornish	473
Croydon	274
Goshen	5
Grantham	126
Hopkinton	1114
Jaffrey	8864
Keene	23591
Langdon	54
Lebanon	4
Lempster	632
Marlow	6
Milford	1
New London	155
Newbury	5
Newport	4483
North Walpole	1
Sunapee	279
Swanzey	202
Unity	135
Walpole	1703
Webster	1099
<hr/> <b>Subtotal</b>	<hr/> <b>55335</b>
<b>OUT OF STATE</b>	
Vermont	17626
Ohio	120
Tennessee	3
Iowa	1
<hr/> <b>Subtotal</b>	<hr/> <b>17750</b>
<b>TOTAL</b>	<b>73085</b>

Source: Wheelabrator Claremont Company, L.P. 2010 Annual Facility Report

## The Title V Air Permit: Regulatory Standards Are Not Health Based

DES classifies the Wheelabrator incinerator in Claremont as a major pollution source requiring a federal Title V (Title “Five”) air permit. DES administers the Title V permit program in New Hampshire (Scott, *Findings of Fact*, 1).

The Title V permit that DES issued to Wheelabrator in 2004 expired on June 30, 2009 (*Title V*, 1). Wheelabrator has applied for an extension to the permit. The incinerator is presently operating under a waiver that DES granted on June 24, 2009. The waiver allows the incinerator to continue operating under the terms and conditions of the expired Title V air permit. The waiver is in effect until DES takes final action on Wheelabrator’s renewal application (Scott, *To Timothy Porter*, 3).

One major problem with the Title V program is the reliance on state and federal regulatory standards that are neither comprehensive nor health-based.

According to the Office of Inspector General, the Clean Air Act of 1970 required the Environmental Protection Agency (EPA) to “regulate air toxics based on **risk** to public health.” However, “EPA could not clearly define a safe level of exposure to these cancer-causing pollutants,” making it “almost impossible to issue regulations.” With amendments to the Clean Air Act in 1990, the focus shifted to **technology-based standards** that “allowed industry the flexibility to develop its own methods of reducing air toxics emissions.”

In his analysis of *The Fourth National-Scale Air Toxics Assessment*, Bob Weinholt states: “Health risk estimates for 49 of the substances in the toxics list specified by the Clean Air Act haven’t been calculated because of limitations in data, toxicity information, or atmospheric modeling capabilities. The same is true for thousands of other known air toxics.”

According to David Christiani, a 2010 report from the President’s Cancer Panel “delivered a forceful message about underestimation of the burden of environmentally induced cancers and the lack of testing data on many chemicals in use or in products on the US market.” Perry Sheffield and colleagues state: “There has been little research to date on the linkages between air pollution and infectious respiratory illness in children, and the resulting health care costs.”

Dr. Philip Landrigan, a nationally recognized expert on environmental pollution and children’s health, sums up the problem this way: “We’re conducting a vast toxicological experiment and we are using our children as experimental animals.”

On June 12, 2007, New Hampshire Governor John Lynch issued a press release in support of the Legislature’s decision to ban incineration of construction and demolition (C&D) debris. According to the Governor, “the burning of toxic construction and demolition debris poses an unnecessary and unacceptable danger to New Hampshire,” and with a ban on incineration “we are protecting the health of our citizens, our environment, and our economy.” The shift to precaution and pollution prevention is noteworthy for Claremont. Burning trash in the Wheelabrator incinerator is as dangerous as burning C&D and should also be banned.

## The Wheelabrator Incinerator: #1 Stationary Source of Air Pollution in Claremont

The Wheelabrator incinerator in Claremont is the city's largest stationary source of air pollution (DES, *Public Health Assessment*, Table 3-1, 12). In 2006, thirty-five local health care professionals called for closure of the incinerator, citing unacceptable and unnecessary health risks for area residents (Health Care Professionals' Statement).

According to DES' *Emissions Summary* and *Emissions Fee Summary*, the Claremont incinerator emitted 228.75 tons of airborne pollutants in 2010, for which the company paid DES almost \$34,000 in emission fees. DES receives more money as pollution increases.

Air emissions are likely higher than what the DES record shows since there are "many unidentified compounds in incinerator emissions" (Global Alliance for Incinerator Alternatives). The nature of waste is continually changing, as is the chemical nature of incinerator emissions (British Society for Ecological Medicine 6).

Wheelabrator reported emissions of particulate matter, sulfur dioxide, nitrogen dioxide, non-methane volatile organic compounds, carbon monoxide (CO), and toxic air pollutants. A 2008 DES fact sheet states toxic air pollutants include dioxins, benzene, arsenic, beryllium, mercury, vinyl chloride, asbestos, and polychlorinated biphenyls (1).

Reports that Wheelabrator has submitted to DES indicate the incinerator has exceeded the emission limit for CO on at least 443 occasions from 1987 through June 2011. DES issued Administrative Orders to Wheelabrator in 1989 and 1990 regarding excess CO emissions, and on July 21, 2010 issued a *Notice of Past Violation* for CO "concentration deviations" that occurred the previous year (Wheelabrator, *Excess Emissions Report*; LaRiviere, *To Robert Scott*; Working on Waste, *Analysis of Air Emissions*, 20; Monroe 2).

Despite the history, the Director of the New Hampshire Air Resources Division stated in 2004 that the EPA determined "the percentage of CO exceedances was within the acceptable range allowed by EPA" (Scott, *Findings of Fact*, 10).

Mercury, dioxin and other persistent toxic substances have received considerable attention because the incinerator emits these toxic chemicals into the air over Claremont every day. Persistent toxic substances accumulate in our air, water, and soil. They also accumulate in the human body, resulting in what is commonly called "chemical body burden." Chemical residues can be found in blood, urine, and breast milk ("*The Problem: Chemical Body Burden*").

The prestigious International Joint Commission stated in its *Seventh Biennial Report*: "Persistent toxic substances are too dangerous to the biosphere and to humans to permit their release in **any** quantity" (Chapter 3).

## Spotlight on Mercury and Dioxin

It is well documented that mercury and dioxin cause serious health problems in humans. Because of the Wheelabrator incinerator, residents of Claremont and surrounding communities are at an increased risk of exposure to these chemicals.

Since 1987, the Wheelabrator incinerator has released hundreds of pounds of toxic mercury into the air over Claremont. In addition, air testing after installation of retrofit equipment at the incinerator showed increased emission rates for dioxin.

### Mercury

Mercury exists in several forms, including elemental mercury, inorganic mercury, and organic mercury. Approximately 80% of the total mercury released to the air from human activities is elemental mercury, with releases primarily from fossil fuel combustion, solid waste incineration, mining, and smelting (DES, *Public Health Assessment*, 62).

Because it is an element, mercury does not degrade after being emitted into the air and water. Instead, it cycles throughout the environment, as shown in Figure 1. Twenty-four years of mercury emissions from the incinerator are still in the environment, and each day Wheelabrator adds more.

Mercury compounds are toxic to the lungs, kidneys, eyes, skin, gastrointestinal tract, immune system, cardiovascular system, and nervous system. Humans can be exposed to mercury by breathing elemental mercury vapors during industrial processes and by eating mercury-contaminated fish and shellfish. Mercury vapor is “readily absorbed by the lungs” (Prüss-Ustün et al; Besser 7).

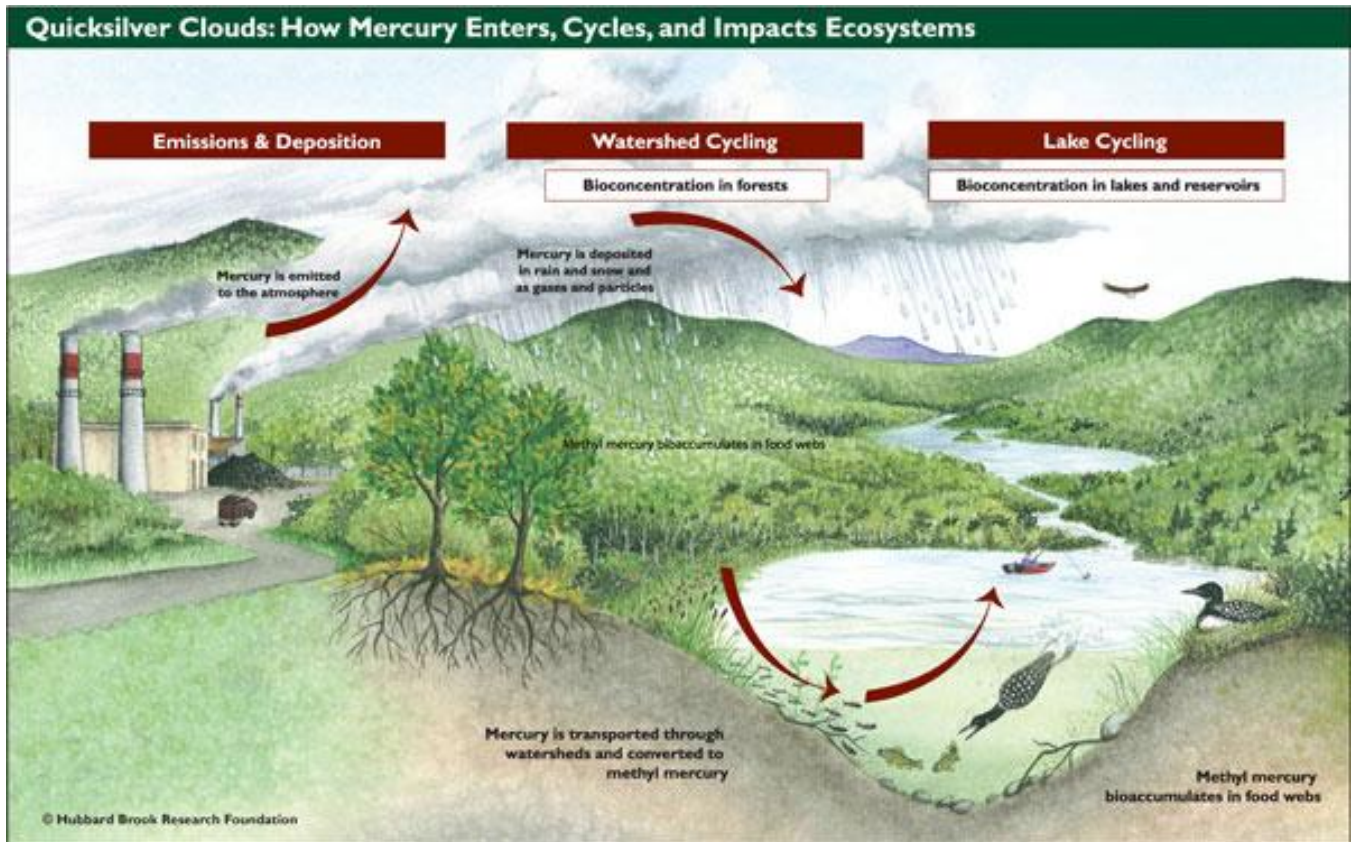
As indicated in Figure 1, airborne mercury enters watersheds and is converted to methyl mercury, a form of organic mercury. Methyl mercury in fish is a significant health risk. Charles Driscoll and colleagues cite research estimating “between 200,000 and 400,000 children are born each year in the United States with pre-natal exposure to methyl mercury sufficient to put them at risk for neurologic impairment due to fish consumption by the mother” (6). A DES *Health Consultation* states methyl mercury “can interfere with critical processes” in a child’s developing brain (12).

DES analyzed mercury concentrations in fish from Crescent Lake (Acworth), Eastman Pond (Grantham), Perkins Pond (Sunapee), Rand Pond (Goshen) and Stocker Pond (Grantham). A 2009 DES fish report warns: “Eating largemouth bass from Perkins Pond could potentially harm the health of young children and women of child-bearing age (developing fetus).” Although based on analysis of only one largemouth bass, DES identified a public health hazard (*Health Consultation* 4, 13).

The DES fish report also provides recommended limits for eating other fish in Perkins Pond and for eating fish from the other water bodies in the study (Table 3). DES has concluded that local

sources contribute to the mercury and dioxin deposited in Claremont area lakes and ponds (Public Health Assessment 72).

**Figure 1: Quicksilver Clouds: How Mercury Enters, Cycles, and Impacts Ecosystems**



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A notable permit violation for mercury occurred at the Wheelabrator incinerator in June 2007. The carbon injection system was inoperable for 8.5 hours and the incinerator exceeded the mercury emission limit. DES sent a *Notice of Past Violation* letter to Wheelabrator dated December 21, 2007. DES copied Claremont City Manager Guy Santagate on the letter (Monroe 1-3).

Mr. Santagate wrote to DES in February 2008 to state he is “deeply concerned that the City was not notified of this violation by either the State or Wheelabrator prior to the City’s receipt of a copy of the December 21<sup>st</sup> letter.” He also told DES that emissions from the Wheelabrator incinerator “have long been a concern of Claremont’s citizens, not to mention City officials” (1).

### Dioxin

Waste incineration creates dioxin. According to a recent letter to the EPA from 72 members of the U.S. House of Representatives, dioxin causes cancer and a “wide range of non-cancer



effects,” including developmental problems, a weakened immune system, and reproductive disease. The Congressional letter notes: “The half-life of dioxin (the amount of time it takes for half of a given amount to break down) in people ranges from seven to 11 years” (Markey et al. 1).

According to the Center for Health, Environment, & Justice, dioxin “can cause developmental and immune effects at levels close to those currently found in the general population,” and “even babies are born pre-polluted with potentially harmful levels of dioxins in their bodies.”

Research has found a link between dioxin from incinerators and non-Hodgkin lymphoma, a cancer that affects the immune system. See, for example, the works of Nathalie Floret, Sarah Goria, and Daniela Porta and their respective co-authors. DES has looked at the number of non-Hodgkin lymphoma cases in Claremont and has sorted the data by five-year periods. The number of cases for the period 2002-2006 is more than double the number of cases noted during the period 1987-1991. The number of Claremont residents with non-Hodgkin lymphoma increased amid a decline in the city’s population (DES, *Public Health Assessment*, 94; “Claremont, New Hampshire”; “Claremont, NH Profile”).

### **Retrofitting the Incinerator: Ongoing Pollution & Increased Emission Rates**

To address airborne emissions of mercury and other pollutants, Wheelabrator changed the fabric filters and installed an evaporative cooling system and a powdered activated carbon injection system at the incinerator in 2005 (Walls 2; DES, *Public Health Assessment*, 100). A year earlier, when granting Wheelabrator a Title V air permit, DES stated the pending retrofit equipment “will further reduce emissions of dioxin/furans,” with an “overall reduction” of 80% or greater (Scott, *Findings of Fact*, 3, 5). In 2006, a Wheelabrator ad in the *Eagle Times* lauded the retrofit as effectively reducing organic emissions such as dioxin.

The record shows otherwise. In annual reports for the period January 2000 to September 2005, Wheelabrator lists emission rates for dioxin that are based on stack testing conducted in 2000. Following installation of the retrofit equipment, DEECO conducted stack testing in 2005, 2006, 2007, and 2010. For those years, Wheelabrator reported dioxin emission rates that exceed the pre-retrofit rate, with the 2010 rate **1247% higher** than the 2000 rate (Figure 2).

DES minimized a similar increase in the dioxin emission rate in 2007, stating the regulatory standard was met and snapshot testing for dioxin may not be completely accurate anyway. According to DES, “measured pollutant levels are not always indicative of longer term emission trends” and “there is an insufficient amount of data from which to extrapolate possible emission trends” (*Public Health Assessment* 91).

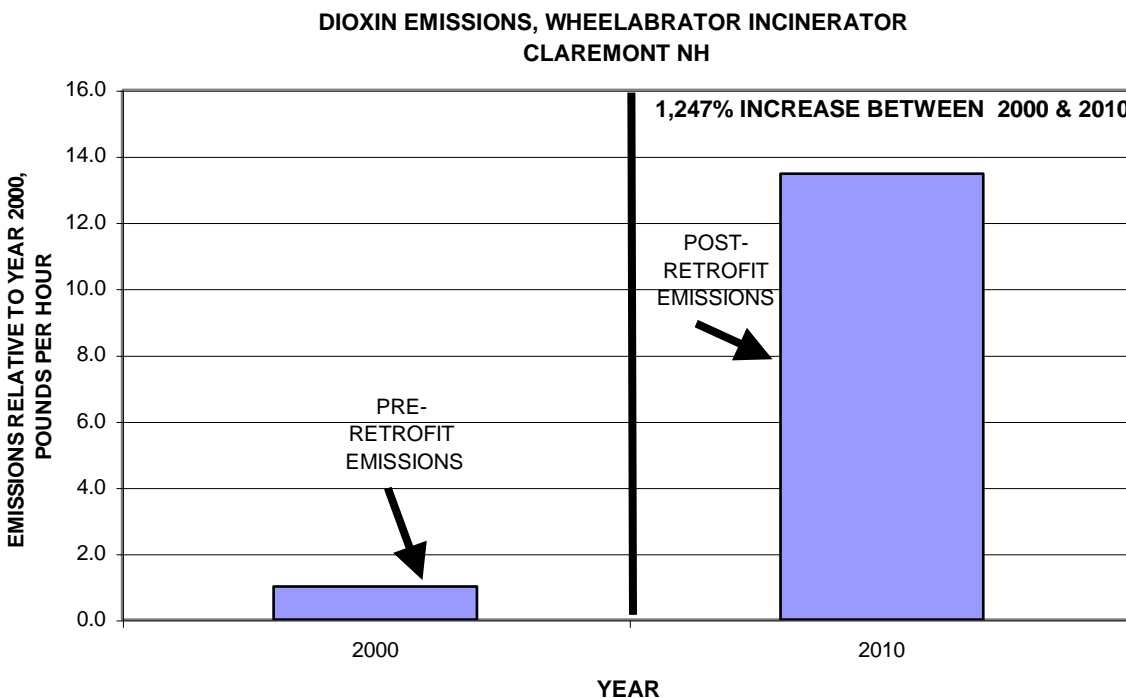
Despite the lack of confidence in the testing protocol, DES has concluded, with inadequate basis in fact, that dioxin emissions from the Wheelabrator incinerator are safe.

It is important to note that retrofit technology does not remedy the cumulative effect of previous dioxin and mercury emissions. Since the incinerator began operating 24 years ago, dioxin, mercury and other toxic chemicals from the incinerator have accumulated in our environment

and in our bodies, and each day the incinerator adds to the toxic load. It is certainly noteworthy when emissions increase post-retrofit, as Wheelabrator's own reports indicate.

Despite these impacts, DES granted Wheelabrator a property tax exemption in 2007 for the 2005 retrofit equipment. DES also kept in effect the 1988 tax exemption for the fabric filter system at the incinerator (Scott, *Decision*, 3-4; Walls 2).

**Figure 2: Dioxin Emission Rates, Before and After Retrofit Equipment**



Graph based on data from stack testing at the incinerator and from Wheelabrator emission reports. Graph © Working on Waste

Retrofit equipment still allows a dangerous amount of pollution to exit the incinerator smokestack. In addition, pollutants captured by the equipment become part of the incinerator ash that Wheelabrator sends to the Turnkey Landfill in Rochester, NH. Wheelabrator sent 20,713 tons of ash to Turnkey in 2010 (Wheelabrator, *2010 Annual Facility Report*, 3). A prior ash disposal site in Newport, NH was closed amid strong local opposition.

Retrofit equipment makes ash more toxic and creates exposure risks through ash handling, transport, and disposal. For example, ash-related spills occurred at the incinerator in September and October 2010, with high levels of cadmium detected in samples that were tested. In response to the October incident, a Wheelabrator manager told DES that she “will begin the process of characterizing the waste for shipment off-site as a hazardous waste” (Berry 1-3; Gagnon, *To David Degler*, 1-7; Gagnon, *Requested Information*, 1).

## **DES Air Quality Report: Flawed Analysis and Conclusions**

Under a cooperative agreement with the Agency for Toxic Substances and Disease Registry, DES released a draft report in March 2009 concerning air quality in Claremont. DES concluded that levels of air toxics in Claremont “are not expected to result in adverse health effects.” DES reached this conclusion despite “the complexities in determining cellular damage, genetic mutations, prenatal exposures, and the nature and extent of toxic chemicals stored in the human body” (DES, *Initial/Public Comment*, 65; Lajoie 1).

Dr. Jonathan Levy of the Harvard School of Public Health provided a peer review of the DES draft report, enclosed as Appendix 1. Working on Waste submitted Dr. Levy’s review to DES in September 2009.

Dr. Levy highlights weaknesses in the DES report. Although seven air toxics<sup>2</sup> exceed cancer risk evaluation guidelines (CREGs) in Claremont, DES states the elevated levels have “no detectable effect on cancer rates” at the present time or in the future (52-60).

According to Dr. Levy, this conclusion is inappropriate because Claremont’s relatively small population means a “detectable” impact would have to be “many orders of magnitude above the common risk levels of concern.” He states: “For air toxics, the question is not whether effects could be detected, but whether they exceed CREGs, which they do in this case” (4).

Nevertheless, the final report DES released in December 2009 again concluded that air toxics in Claremont do not threaten public health (*Public Health Assessment*, 68).

## **Incineration Is Not Green Energy**

Listing the Wheelabrator incinerator in Claremont as a renewable energy source is unacceptable. Incineration causes significant pollution and destroys resources. According to *Stop Trashing the Climate*, “tremendous opportunities for greenhouse gas reductions are lost when a material is incinerated” (Platt et al. 9)

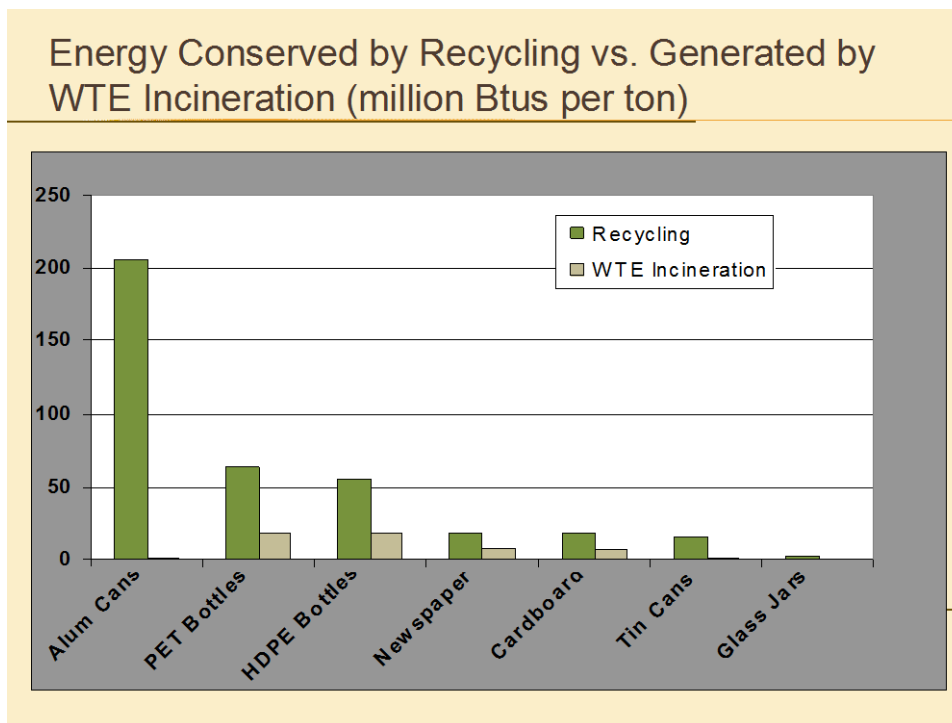
More energy is saved with recycling than is generated by burning the same materials in a “waste-to-energy” (WTE) incinerator such as Wheelabrator’s in Claremont, as illustrated in Figure 3 (Morris, *Graphic*).

Economist Jeffrey Morris states that recycling newspaper, cardboard, mixed paper, glass bottles, glass jars, aluminum cans, tin-plated steel cans, plastic bottles, and other recoverable materials “consumes less energy and imposes lower environmental burdens” than sending these materials to a landfill or incinerator, even after accounting for energy that may be recovered from waste materials at either type of facility (*Comparative LCAs*).

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<sup>2</sup> Acetaldehyde, arsenic, benzene, chloroform, chromium, 1,2-dichloroethane, formaldehyde

**Figure 3: Energy Conserved by Recycling vs. Generated by Incineration**



Sound Resource Management Group. Used with permission

### The Transition to Safe Alternatives

Antioch New England Institute (ANEI) has worked with Claremont-area residents, including public officials, to implement ANEI’s 2007 *Recycling-Based Waste Management Action Plan for the Communities of Sullivan County, NH (Action Plan)*. The plan calls for a zero waste model where the emphasis is on conserving resources, protecting the environment, and creating jobs. The *Action Plan* is enclosed as Appendix 2.

Pages 9, 10, and 11 of the *Action Plan* provide a summary of how Sullivan County can move toward a recycling-based system. Of prime importance is the need for local governments to “declare waste reduction and recycling as waste management priorities.” Convenient curbside recycling is also an important step.

One of the principle recommendations of the *Action Plan* is construction of a materials recovery facility (MRF) to serve Sullivan County. The MRF would process recyclables and help make recycling more efficient. ANEI, the Sullivan County Commission, the City of Claremont, and the Town of Newport commissioned Resource Recycling Systems (RRS) to research this issue.

RRS released a report in October 2007. The following are among the report's recommendations (5):

1. Develop curbside recycling programs in the larger municipalities in Sullivan County;
2. Develop a county-wide Pay-As-You-Throw program to encourage recycling; and
3. Construct a MRF.

The full report is on the Upper Valley/Lake Sunapee Regional Planning Commission website at: <http://sites.google.com/site/sullivancountymsw/solid-waste-publications>. Go to *Recycling Collection and Processing Options for Sullivan County, New Hampshire* (PDF).

The Wheelabrator incinerator in Claremont converts valuable resources into toxic air emissions and ash while creating barriers to waste reduction and recycling. We know there is a better way.

We call upon public officials to fully support initiatives that will help replace the incinerator with safe and affordable resource management.

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**Appendix 1:** Dr. Jonathan Levy, Associate Professor of Environmental Health and Risk Assessment, Harvard School of Public Health. *Peer Review of Public Health Assessment for Ambient Air Quality in Claremont, Sullivan County, New Hampshire*. August 26, 2009.  
<http://www.americanhealthstudies.org/levy-peerreview.pdf>

**Appendix 2:** Antioch New England Institute. *Recycling-Based Waste Management Action Plan for the Communities of Sullivan County, NH*. February 2007.  
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**Addendum-2015**

**Airborne Dioxin Emissions 2000-2010**

Pages 9 and 10 of the Working on Waste report indicate a 1247% increase in airborne dioxin emissions from the Wheelabrator incinerator during the period 2000-2010. Working on Waste based its analysis on inventory reports that Wheelabrator filed with the New Hampshire Department of Environmental Services (DES).

The 1247% increase pertains to tetrachlorodibenzo-p-dioxin or TCDD, one of many dioxins and the only one referenced in the inventory reports.

DES has asserted the inventory reports were mislabeled. DES found a 143% increase in total airborne dioxin emissions between 2000 and 2007 and a decline in 2010.

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See Exhibit 5 in the *Notice of Appeal* for additional information regarding the TCDD emission rate.

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