Inadequate Monitoring The Truth about Continuous Monitoring

 Continuous monitoring will be done for only a handful of the hundreds of pollutants emitted

 Many of the most toxic pollutants will only be monitored once a year during a pre-arranged stack test

•(See Table 4-1, *Human Health and Ecological Risk Assessment*, Dec.10,2009)

Variable wastestream = variable emissions

Slippery Slope of Safety Evaluation

Epidemiological Studies

Risk Assessment

Biomonitoring

What Happened in Halton

•Dr. David Pengelly reviewed the Halton 4A Report and in his report repeatedly stated concerns regarding PM2.5, nitrogen dioxide and other combustion-related pollutants and states:

"all of the recent epidemiological literature on particulate and gaseous combustion-related pollutants demonstrate clearly that statistically significant associations with a suite of different outcomes at lower and lower concentrations form a coherent picture of adverse effects on public health"

What Happened in Halton

•Dr. Pengelly concluded that the Halton 4a report (written by the same consultants used in this EA) failed to provide the evidence that modern incinerators are safe

 Halton's Medical Officer of Health, Dr. Nosal, advised to side with the "precautionary principle" and recommended the decision on the incinerator be shelved

What Happened in Durham

 Durham's Medical Officer of Health, Dr. Kyle,
has repeatedly used one medical doctor, Dr. Lesbia Smith,
for reviews of health documents in this EA

Dr. Smith's Epidemiological Review

•Like Pengelly, she concluded that there was no proof that modern incineration is safe BUT

instead of applying the precautionary principle, she concluded there was **no proof that modern incineration is not safe** and the consultants used **risk assessment to determine safety**

Dr. Smith's Statement on Nanoparticles, August 20, 2007

"It should be noted that these particles are emissions of concern primarily from hazardous waste incineration so that it would be prudent to ensure that residual wastes are free of those components which are associated with toxic nanoparticles formation (e.g. plastics) before the waste is destroyed in an EFW facility."

Energy from Waste Facility in the Region of Durham, contained in Appendix A of Durham Region Report 2007-MOH-20

Dr. Smith on Nanoparticles September, 2007

"The inference that plastics per se are a source of nanoparticles is incorrect. Limiting plastics in general is not a prerequisite of incineration technology."

> Energy from Waste Facility in the Region of Durham, Amended: September 28, 2007

Dr. Smith on Evaluating Safety & Exposure August 20, 2007

"By using risk assessment methodology and information from epidemiology, coupled by direct measurement of exposures (biomonitoring)

in the appropriate setting, greater precision can be achieved in calculating exposure from *environmental contaminants and health effects in populations. ...*

Because each method can have limits and challenges, a combination best serves public health."

Page 26, Report to Dr. Kyle, Durham Region Report 2007-MOH-20, Appendix A

Dr. Smith Letter to Dr. Kyle, March 1, 2009

Dr. Smith endorses the most minimal monitoring option(Option 1) recommended by the consultants as "optimal". (Durham Region Report 2009-J-17, Appendix A)

Option 1 recommended:

NO AMBIENT AIR MONITORING

NO ENVIRONMENTAL MONITORING
NO HUMAN BIOMONITORING

Section 7.1, Final Report Review of International Best Practices of Environmental Surveillance for Energy-From-Waste Facilities, Feb.16,2009

Dr. Smith on Evaluating Safety & Exposure

"By using risk assessment methodology and information from epidemiology, coupled by direct measurement of exposures (biomonitoring)

in the appropriate setting, greater precision can be achieved in calculating exposure from *environmental contaminants and health effects in populations. ...*

Because each method can have limits and challenges, a combination best serves public health."

Page 26, Report to Dr. Kyle, Durham Region Report 2007-MOH-20

Dr. Smith, Memo to Dr. Kyle, June 8, 2009

"In the case of the need for monitoring of environmental media, this is considered to be useful and is recommended. ... Air and soil monitoring is recommended to ensure compliance."

Letter to Dr. Kyle, Appendix D, Durham Report 2009-COW-01, June 16, 2009 Air Quality Issues (High Ozone,NO2 and PM2.5) Were NOT Emphasized or Highlighted by the Regions' Consultants to the Public nor to the Council at Meetings

Remarkably, Dr. Kyle's Report, 2009-COW-01, June 16, 2009, did not discuss present air quality measured at the site or discuss air quality concerns

Slippery Slope of Safety Evaluation:

Consultants will use Risk Assessment To Determine Safety

But Risk Assessment cannot assess for some of the MAJOR concerns

- 1. chemical mixtures
- 2. synergistic effects (chemicals reacting)
- 3. toxic ultrafine particulates (nanoparticles)
- 4. hundreds of unnamed pollutants of unknown toxicity

5. pollutants known to be emitted by incinerators, but companies do not track them

Chemical Mixtures

"To date, there have been limited to no mixture additive toxicology studies using this approach in human health risk assessment. This is a considerable source of uncertainty in any risk assessment being conducted in Ontario."

•Section 7.9.1.4,page 178, Site Specific Human Health and Ecological Risk Assessment Technical Study Report, Dec.4, 2009

Particulates and Risk Assessment Quote from paper done by Expert Dr. Vyvyan Howard

"The risk assessment in relation to particulates that has been undertaken by the Indaver is rather simplistic. The principle assumption, and the basis for the conclusion, is that if air quality standards are not exceeded by the combination of existing ambient concentrations and the marginal increase from the incinerator then no harm is assumed to occur.

This approach is, of course, fundamentally flawed for those emissions, like particulates for which no safe level can be demonstrated."

Statement of Evidence, **Particulate Emissions and Health**, Proposed Ringaskiddy Waste-to-Energy Facility, June 2009

Concerns With How Consultants Assessed Risk for Key Pollutants

• Exposure estimates are compared against TOXICITY REFERENCE VALUES

• It is critical that the TRVs selected are appropriate and up to date with current science

 For NO2 and PM2.5 the consultants used air standards instead of appropriate TRVs to characterize risk

Clarington Reviewer Comments

Clarington Report PSD-071-09, July 6, 2009, Attachment 14

"Air guidelines may not be based on health effects and thus concentration ratios obtained using these values would not be considered valid." (Comment 50)

"The values for particulate matter PM10 and PM2.5 do not reflect the current science on particulate matter. The National Ambient Air Quality Objective for Particulate Matter has reference values for health based values of 15 μ g/m³ for 24-h PM2.5 and 25 μ g/m³ for PM10." (Comment 53)

Using the <u>Consultants</u> Choice of Reference Values:

NO Inhalation Risks Identified For 140,000 tpy Incinerator

Using <u>World Health Organization</u> Benchmark Values:

Potential Risk to Human Health Identified for PM2.5 and NO2 in Baseline Traffic and 140,000 tpy Cases

Table 7-11 pg 173, Table 7-21 pg 205, Table 7-22 pg 207-208, Table 7-53 pg 267Human Health and Ecological Risk Assessment Technical Study Report,
Dec 10, 2009

COPC	Baseline Traffic Case Concentration Ratio (CR) Values			Baseline Traffic Case Concentration Ratio (CR) Values – WHO benchmarks [®]		
	1-hour	24-hour	Annual	1-hour	24-hour	Annual
Ammonia ^d	(**)	-		2.00		-
Carbon Monoxide (CO)bc	0.28	0 2 .	1 - 24 - 13 1	2 - 2 4 78	2	8
Hydrogen Chloride (HCI) ^d	(4)) (ř	(199)	100		8
Hydrogen Fluoride (HF) ^d	19.50		10.0	8.00		-
Nitrogen Dioxide (NO ₂)	0.39	0.53	0.77	0.78	2	1.2
Particulate Matter - PM10 ac	-	0.021		-	0.021	0.010
Particulate Matter - PM2.5	1.000	0.70		8	0.84	0.99
Particulate Matter – Total ^a	1237	0.31	0.36	17 4 77	<u> </u>	
Sulfur Dioxide (SO2)	0.031	0.071	0.21	(#)	0.16	8

Table 7-11 Maximum Concentration Ratio (CR) Values using Baseline Traffic Case Air Concentrations for CACs

* 1-Hour TRV Not Available

⁸ 24-Hour TRV Not Available

⁶ Annual Average TRV Not Available ⁴ Not Included in the Traffic Case Assessment

* V Indicates WHO benchmark not available

COPC	Concentration Ratio (CR) Values – 140,000 tpy							
	Baseline Case	Project Alone	Project Case	Process Upset Case	Process Upset Project Case			
1-Hour					e neder K			
Eye Irritants	0.0048	7.1E-04	0.0055	0.0071	0.012			
Nasal Irritants	0.0079	8.3E-04	0.0087	0.0083	0.016			
Respiratory Irritants	0.33	0.23	0.56	1.5	1.9			
Neurological Effects (Neurotoxicants)	0.026	2.1E-04	0.026	0.0021	0.028			
24-Hour								
Eye Irritants	0.0083	4.5E-05	0.0083	4.5E-04	0.0087			
Nasal Irritants	0.0079	4.1E-05	0.0079	4.1E-04	0.0083			
Respiratory Irritants	1.1	0.098	1.2	0.77	1.9			
Neurological Effects (Neurotoxicants)	0.55	1.2E-04	0.55	0.0012	0.55			
Annual	3	V.		Манан III				
Nasal Irritants	0.035	1.4E-05	0.035	3.5E-05	0.035			
Respiratory Irritants	0.94	0.0082	0.95	0.011	0.95			
Neurological Effects (Neurotoxicants)	0.050	2.3E-04	0.050	3.5E-04	0.050			
Reproductive/Developmental Effects	0.0073	1.5E-04	0.0074	2.1E-04	0.0075			

Table 7-24 Concentration Ratio (CR) Values at 140,000 tpy for Chemical Mixtures at the Maximum Ground Level Concentration

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212



Emissions Limits for Incinerator Will Not Meet New Proposed A-7 Guidelines

.Emissions limits for:

- dioxins and furans
- carbon monoxide (CO)
- organic matter

do not meet the proposed revised A7 guideline.

•Section 3.1.3 and Table 3-3, page 15, *Air Quality Assessment Technical Study Report*, December 4, 2009

Summary

- Air quality is already poor
- Incinerator adds very significant emissions of NO2, PM2.5,heavy metals,dioxins/furans,+++
- Relying on risk assessment to determine safety is not appropriate for incineration
- Only a handful of pollutants will be monitored continuously; the remaining (some highly toxic) pollutants will only be monitored one day a year
- Evaluation against more health protective WHO standards results in identification of potential risk to human health
- Emissions limits in EA do not meet proposed revised A-7 Guidelines
- Health Canada advises BAT and further mitigation

Ministry Review Statement From Executive Summary "The proposed thermal treatment facility will benefit the communities in the Regional Municipalities of Durham and York. The ministry is satisfied that the proposed mitigation methods and contingencies will ensure that any potential negative impacts will be minimized and managed."

...will *benefit* the Regions of Durham and York... what EA were they reading???