BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	R07-8
PROPOSED AMENDMENTS TO	)	(Rulemaking-Land)
SOLID WASTE LANDFILL RULES	)	
(35 Ill. Adm. Code 810 and 811)	)	
	)	

NOTICE

Dorothy Gunn, Clerk
Illinois Pollution Control Board
James R. Thompson Center
100 W. Randolph, Suite 11-500
Chicago, Illinois 60601
(VIA COOL)

Bill Richardson, General Counsel
Illinois Dept. of Natural Resources
One Natural Resources Way
Springfield, Illinois 62702-1271
(Via First Class Mail)

Matt Dunn
Environmental Bureau Chief
Office of the Attorney General
James R. Thompson Center
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Chicago, Illinois 60601
(Via First Class Mail)

Timothy J. Fox
Ill. Pollution Control Board
James R. Thompson Center
100 W. Randolph, Suite 11-500
Chicago, Illinois 60601
(Via First Class Mail)

(Service List-Via First Class Mail)

PLEASE TAKE NOTICE that I have today filed with the Office of the Clerk of the Illinois Pollution Control Board the Illinois Environmental Protection Agency's Pre-filed **Testimony of Gwenyth Thompson and Christian J. Liebman**, a copy of each of which is herewith served upon you.

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY

By: _____
Kimberly A. Geving
Assistant Counsel
Division of Legal Counsel

DATE: February 14, 2007

1021 North Grand Avenue East
P.O. Box 19276
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(217)782-5544

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
PROPOSED AMENDMENTS TO SOLID WASTE LANDFILL RULES,	)	R07-8 (Rulemaking-Land)
(35 Ill. Adm. Code 810 and 811)	)	

MOTION FOR ACCEPTANCE

NOW COMES the Illinois Environmental Protection Agency ("Illinois EPA") and, pursuant to 35 Ill. Adm. Code 101.Subpart C and 35 Ill. Adm. Code 102.424, moves the Illinois Pollution Control Board ("Board") to accept the attached written testimony of Gwenyth Thompson and Christian J. Liebman for the above-captioned matter.

Respectfully submitted,

ILLINOIS ENVIRONMENTAL
PROTECTION AGENCY

By: _____

Kimberly A. Geving
Assistant Counsel
Division of Legal Counsel

DATE: February 14, 2007

1021 North Grand Ave. East
P.O. Box 19276
Springfield, Illinois 62794-9276
(217)782-5544

THIS FILING IS SUBMITTED ON RECYCLED PAPER.

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
PROPOSED AMENDMENTS TO SOLID WASTE LANDFILL RULES,	)	R07-8 (Rulemaking-Land)
(35 Ill. Adm. Code 810 and 811)	)	

TESTIMONY OF GWENYTH THOMPSON

My name is Gwenyth Thompson. I am currently the manager of the Groundwater Assistance Unit to Solid Waste in the Permit Section of the Bureau of Land at the Illinois Environmental Protection Agency ("Agency").

I would like to thank everyone involved in this rulemaking effort. I would particularly like to thank the National Solid Wastes Management Association representatives for their cooperation with the Agency in addressing our concerns regarding changes to the current regulations, including incorporation of Agency input into the proposed changes. In addition, I would like to thank the individual citizens, representing themselves and special interest groups for attending these hearings and for their interest, questions, and input.

The purpose of my testimony is to address issues raised at the first hearing in this matter. My testimony is structured to track the amendments as addressed in the transcript from the first hearing.

1. Amendment 10, p. 63, line 9. I would first like to point out that this regulation, 35 Ill. Adm. Code 811.315(e)(1)(G)(i), incorporates the 35 Ill. Adm. Code 620 ("620") list of

parameters, not the *standards* associated with those parameters. Let me stress that we do not use the standards (values) from the 620 regulations, just as we did not use the standards from 35 Ill. Adm. Code 302 ("302") in the past, nor will we use them in the future. Landfills subject to 35 Ill. Adm. Code 811 **have their own standards,** which will be discussed below in detail (see discussion of Applicable Groundwater Quality Standards ("AGQS")). The 620 reference in these proposed amendments is solely intended to use the 620 **list of parameters**. It should also be noted that the same rulemaking that promulgated the 620 standards, R1989-014, struck the applicability of 302 to groundwater.

To address Ms. Andria's question directly, I compared the constituents from Part 302, public water supply standards to those of the Part 620, Class I potable groundwater standards. By my count, there are 11 more inorganic parameters and standards in 620 than there are in 302. In addition, there are 40 more organic parameters and standards in 620 than there are in 302. Therefore, by virtue of having more parameters, 620 is more comprehensive for these rules than 302.

At Ms. Andria's request, I compared the standards for the 22 parameters that inhabit both the 302 and 620 lists. For 13 of the parameters, the 620 standards were the same or had lower values (meaning that 620 values were as conservative or more protective). The exceptions were Barium, Chromium, Iron, Selenium, Sulfate, Total Dissolved Solids (TDS), Heptachlor, Heptachlor Epoxide, and Sylvex, which had slightly higher standards. For those parameters, I reiterate my previous testimony that, to the best of my knowledge, the standards promulgated for 35 Ill. Adm. Code 620, Class I, have been developed specifically to protect human health and the environment in potable water supplies. However, to reiterate, these values are moot for this

regulation because we don't use the standards in 620; rather, we use 620 for its list of parameters. The standards come from the AGQS.

There are only 5 constituents listed in the 302 standards that are not found in 620: Aldrin, Dieldrin, DDT, Oil, and Parathion. Of these, Oil exists on the proposed detection monitoring list. The others are pesticides, and pesticides are all included in the assessment monitoring list. The standard that these parameters must meet is background, as discussed below.

2. Amendment 10, p. 65, lines 7 through 23. In referring to 35 Ill. Adm. Code 620 standards, Mr. Rao asked which groundwater quality standards apply to landfills. For 35 Ill. Adm. Code 811 landfills, the groundwater standard is the AGQS, which is defined as ambient background as determined by statistical analysis of existing groundwater quality. This is the groundwater standard for 811 landfills at the edge of the zone of attenuation or compliance boundary (100 feet from the edge of the waste or the property boundary, if closer). In other words, if natural background contains lower concentrations than allowed by any standard, then the facility must meet the lower concentrations; the regulations do not allow exceedences up to a given standard. However, within the zone of attenuation (the area between the waste and the 100-foot compliance boundary), Class IV groundwater applies, as stated in 35 Ill. Adm. Code 620.240(a), which acknowledges 35 Ill. Adm. Code 811. The Class IV designation allows for Maximum Allowable Predicted Concentrations ("MAPCs").

As found in 35 Ill. Adm. Code 811.317 and 811.318(c), a landfill operator is required to develop MAPCs using a contaminant transport model as an early warning mechanism. MAPCs apply at wells located midway between the waste boundary and compliance boundary. If an MAPC is exceeded 50 feet from the waste boundary, then the AGQS may potentially be

exceeded at the compliance boundary. Therefore, an exceedence of an MAPC would initiate assessment in order to prevent impacts at the compliance boundary. Outside the landfill zone of attenuation, the applicable groundwater standard is the standard as defined by 35 Ill. Adm. Code 620.

3. Amendment 19, pp. 80-83. The amendment deletes total metal monitoring from the detection monitoring program, though retains them in assessment monitoring. A number of the total metals are required for detection monitoring by 40 CFR 258, Appendix I (the federal requirements for municipal solid waste landfills). However, the federal rules allow the State to alter the required list upon making a demonstration to USEPA, in writing, and received their concurrence that the proposed alternate list was an adequate substitution. Copies of the correspondence accompany this testimony.

4. Amendment 19, p. 84. Ms. Andria offers the concern that the metals are tested ". . .after the groundwater contamination has occurred." Our practice at new landfills requires background development for an extensive list of parameters, which can be found in Attachment 1 at the end of the document called LPC-PA19. It can be found at the Agency's website: http://www.epa.state.il.us/land/regulatory-programs/permits-and-management/forms/pa19-instructions.pdf. The parameter list contains most parameters required during assessment. Functionally, background has already been developed for most parameters on the assessment monitoring list, which are available for comparison, should assessment monitoring be required in the future. In addition, regulation 35 Ill. Adm. Code 811.319(b)(5)(C) requires that background be developed for any parameter that is detected in groundwater during assessment monitoring. In the circumstance where background has not been developed, this regulation requires that it be

developed. Background must be established at locations unaffected by the landfill.

5. Amendment 26, p. 125. The Agency committed to provide the exact link on the Agency website where all active (under review) and inactive (acted upon) applications are described. That web address is: http://epadata.epa.state.il.us/land/solidwaste/. This link allows a user to search for both active and inactive applications by several variables (e.g., facility name, site number, city, county). The information includes the following: the date the application is received, the date that the Agency is required to take final action, a brief summary of the application's purpose, names of Agency reviewers, and, for inactive applications, dates that the Agency took action.

6. Amendment 45, p. 164. I would like to clarify my previous response to Ms. Liu. Aitchison's adjustment, as well as Cohen's, are generally used when non-detects are between 15% and 50%; the data sets must be normally distributed.

This concludes my testimony.

GWENYTH THOMPSON, L.P.G.
March, 1998 Licensed Professional Geologist
State of Illinois License No. 196-000521

EXPERIENCE:

2000 – Present
Illinois EPA Bureau of Land Permit Section
Manager - Solid Waste Groundwater Unit
Supervise geologists reviewing applications for solid waste landfills; review groundwater impact assessments; review proposed adjusted standards and regulatory changes; provide technical support and training in contaminant transport modeling.

1993 – 2000
Illinois EPA Bureau of Land Permit Section
Assistant Manager - Solid Waste Groundwater Unit Manager (EPS IV)
Reviewed applications for landfill development, groundwater investigations, contaminant transport modeling and corrective actions.

1990 – 1993
Illinois Department of Mines & Minerals - Land Reclamation Division
Evaluated coal mining permit applications with for potential impacts to surface and groundwater. Evaluated groundwater quality/quantity data.

1987 - 1990
Illinois Department of Mines and Minerals
Division of Oil & Gas-Underground Injection Control Program
Completed area reviews for geology and active injection as part of evaluation for Class II injection wells. Directed field investigations.

1985 - 1987
Abandoned Mined Lands Reclamation Council - Emergency Response
Field investigator of abandoned mine emergencies. Designed and implemented abatement procedures.

February 1985
Geologist/Mudlogger – Liberal, Kansas Volunteer position.
Assisted site geologist with development wells.

EDUCATION:

May, 1984
B.S. Geology
University of Oklahoma – Norman, Oklahoma

1990/1991
Graduate Work – Hydrogeology and Environmental Science
Wright State University
Sangamon St. University

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGIONS 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF
DW-8J

October 11, 2006

Mr. Stephen Nightingale, PE
Permit Section Manager
Illinois Environmental Protection Agency
1021 N. Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276

Mr. Nightingale:

Your letter, dated September 18, 2006, requesting 40 CFR Part 258 Appendix I Total Metals Proposed Deletion/Replacement, has been reviewed. Your letter provides detailed information on how the proposed changes to the Illinois Environmental Protection Agency detection monitoring program will provide a reliable indication of inorganic releases from MSWLF units to groundwater, taking into account the factors outlined 40 CFR 258.54(a)(2)(i-iv). The information you submitted is considered sufficient justification for implementing the proposed detection monitoring program.

As always the IEPA approach of communicating with Region 5 staff on proposed program changes in advance of the formal submittal is greatly appreciated.

Sincerely,

Donna Twickler

Donna Twickler
Environmental Engineer

DLC Kim Geving

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

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ROD R. BLAGOJEVICH, GOVERNOR DOUGLAS P. SCOTT, DIRECTOR

217/524-3300

September 18, 2006

Certified Mail
7002 2030 0001 1879 4442

Ms. Donna Twickler
Environmental Engineer
USEPA Region 5, DW-8J
77 West Jackson Blvd.
Chicago, Illinois 60604

Re: 40 CFR Part 258 Appendix I Total Metals Proposed Deletion/Replacement

The Illinois Environmental Protection Agency (IEPA) requests a determination from the US EPA whether proposed detection monitoring program changes are considered consistent with 40 CFR Subtitle D. The proposal eliminates certain unfiltered metal parameters from the Illinois annual detection monitoring constituent list. These metals are contained on the 40 CFR Part 258 Appendix I list. The specific proposal and associated rationale is detailed below.

Existing Program:
The existing detection-monitoring program in Illinois includes quarterly monitoring of the G1 list of parameters and annual monitoring of the G2 list of parameters (see Attachment I). The G1 list is monitored quarterly for filtered metals including arsenic, cadmium, iron, lead, manganese, and mercury. The G2 list is a comprehensive list of inorganic and organic parameters: it includes organics from 40 CFR 258 Appendix I, 40 CFR 141.40, Illinois Administrative Code 620, organics found at solid waste facilities from publications, and unfiltered inorganics antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, selenium, silver, thallium, vanadium, and zinc. After the collection of a minimum of 5 years of data a facility may request a reduction from quarterly to semi-annual sampling in detection monitoring wells.

Proposed New Program:
It is proposed that an alternative list of inorganics be substituted for the 40 CFR Part 258 Appendix I total metals based on criteria stipulated in 40 CFR Part 258.54(a)(2). The proposed list of indicator constituents (new G1 list) to be analyzed quarterly includes total Cyanide and the following filtered parameters: Ammonia-Nitrogen, Arsenic, Boron, Cadmium, Chloride, Chromium, Lead, Magnesium, Mercury, Nitrate, Sulfate, Total Dissolved Solids and Zinc. In addition, any facility accepting more than 50% by volume non-municipal waste must also monitor for additional parameters based on leachate and waste content. As with the existing program, under the new program, a facility may petition for a reduction from quarterly to semi-annual monitoring after 5 years of data have been collected.

In addition, revisions are proposed for the G2 list. The new list would include an expanded list of 40 CFR Part 258 Appendix I volatile organics and be sampled more frequently. All detection monitoring wells will be sampled semi-annually for all organic parameters from 40 CFR Part 258 Appendix I, as well as 40 CFR Part 141.40 organics (see Attachment II).

Leachate continues to be monitored for the parameters in Attachment I. Proposed revisions include sampling monitoring points on an alternating schedule. The facility would monitor the Attachment I list on a semi-annual basis with each sampling point monitored at least biennially.

Supporting Information and Discussion:
This section presents an overview of the total heavy metal constituents as a compound class in terms of their utility as detection monitoring parameters and presents an alternative list. The alternative list is proposed in accordance with 40 CFR Part 258.54(a)(2), the Director of an approved State may establish an alternative list of inorganic indicator parameters for a MSWLF unit, in lieu of some or all of the heavy metals listed under Appendix I, if the alternative parameters provide a reliable indication of inorganic releases from the MSWLF unit to the ground water. In determining alternative parameters, the Director shall consider the following factors:

(i) The types, quantities, and concentrations of constituents in wastes managed at the MSWLF unit;
(ii) The mobility, stability, and persistence of waste constituents or their reaction products in the unsaturated zone beneath the MSWLF unit;
(iii) The detectability of indicator parameters, waste constituents, and reaction products in the ground water; and
(iv) The concentration or values and coefficients of variation of monitoring parameters or constituents in the ground water background.

The proposed changes to the detection monitoring program are based upon examination of literature pertaining to the frequency of detected compounds in leachate, studies and information pertaining to mobility, stability and persistence, and the contrast of concentrations between leachate and ambient groundwater. The program does not propose to delete all 40 CFR Part 258 Appendix I inorganics, as five (arsenic, cadmium, chromium, lead and zinc) will be retained as quarterly indicators.

Potential indicator constituents for landfills have been studied as to their relative mobility, stability and persistence in the subsurface environment. According to published research the heavy metals as a compound class are among the least mobile of detection monitoring parameters when compared to other inorganic parameters and VOCs (Christensen, et al., 1994). In leachate characterization studies conducted, it has been shown that the detection frequency of the trace metals monitored range from 45% (RUST E&I, 1995) to 67% (US EPA, 1998). The WMI study performed by RUST E&I was based on 10 landfills located in Illinois, Louisiana, New York and

Pennsylvania. MSW leachate data was studied for the purpose of identifying which constituents are prevalent in leachate and for determining which would provide an indication of a release. The study included the trace metals summarized below, as well as inorganic constituents and organic compounds (not shown).

Concentration ranges and detection frequencies of the trace metals in MSW leachate.

	WMI Study [1] (1989-1992)			Literature Data [2]		
Trace Metal	Minimum (ug/L)	Maximum (ug/L)	Detection Frequency (%)	Minimum (ug/L)	Maximum (ug/L)	Detection Frequency (%)
Antimony	<7	9.3	8	1.5	47,000	30
Arsenic	<4	120	92	0.2	982	92
Barium	ND	1,810	96	80	5,000	94
Beryllium	<2	5.1	13	1	10	21
Cadmium	<5	13	8	0.7	150	74
Chromium	<10	174	79	0.5	1,900	96
Cobalt	ND	120	42	40	130	24
Copper	<20	188	54	3	2,800	76
Lead	<2	319	67	5	1,600	85
Nickel	<20	821	75	20	2,227	89
Selenium	<2	2.2	4	1	90	44
Silver	<10	41	25	0.8	50	47
Thallium	<5	14	8	4	860	41
Vanadium	ND	170	13	9	29	100
Zinc	<20	53,000	92	30	350,000	99

ND – not detected

(1) – RUST E&I, 1995. Leachate Characterization Study.
(2) - "Draft Background Document: Summary of Data on Municipal Solid Waste Landfill Characteristics", USEPA July 1988). Summary of 83 Sanitary Sites. Includes data from Wisconsin Study (1984), NUS Study (1987), Sobotka Study (1986), Trade Assoc. Studies (1985), Texas A&M Study (1986), and Waste Management Study (1987).

Christensen, et al. (1994) state that "heavy metals do not constitute a groundwater pollution problem at landfills because landfill leachates usually contain only modest heavy-metal concentrations …and… are subject to strong attenuation by sorption and precipitation." Though the same work cautions against the possible effect of long-term leachate changes toward increased mobility of heavy metals, a recent paper by Kjeldsen, et al., (2002) concludes that the "postulated enhanced release of accumulated heavy metals" would not take place in the long term according to model analyses.

The mobility of metals is controlled by physical factors related to the geologic matrix (e.g., rock type, mineralogy, grain size) and hydrochemical factors related to the subsurface environment (e.g., pH, Eh, complexing ligands, competing ions). The physiochemical properties of the metals and the subsurface conditions govern the partitioning, transport, and fate of each of the metals. Metals in the ground may exist as: free ions, insoluble precipitates, metal ligand complexes, adsorbed species, species held on to by ion exchange, and species that differ in oxidation states.

Due to the positive charge of metal ion species, adsorption of metals onto negatively charged clay minerals or organic matter is an important limiting process with respect to metals mobility.

Dissolved parameters exist truly in solution (such as groundwater). Dissolved parameters cannot be removed from a liquid without a phase change (such as distillation, precipitation, adsorption, or extraction) (MacKenzie *et al*, 1998). Suspended (or total) solids are large enough to either settle out of solution or be removed by filtration (MacKenzie *et al*, 1998). The mobility of inorganic parameters is therefore better reflected by monitoring dissolved parameters as compared to total metals, which have been rendered immobile due to physical or chemical processes. This is especially true in fine-grained environments.

Many detection-monitoring programs at facilities in Illinois are developed in silty/clayey subsurface materials, which often yield turbid samples. Alteration of sampling procedures (use of low flow sampling) to decrease turbidity has yielded varied results of success. Turbidity creates a large bias in the resultant data, which results in wholly unreliable data for detection monitoring purposes (Gibbons, R. D. and Sara, M., 1995). Our experience in administering the current regulatory program in Illinois underscores this unreliability. Turbidity issues contribute to an unacceptable false positive rate that necessitates complex and continual statistical treatment of the data to maintain acceptable statistical power.

Specifically, the following parameters proposed for removal from the Illinois detection-monitoring program. Justification is provided as required by 40 CFR Part 258(a)(2).

Antimony (total)
Detection frequency of antimony in MSW landfill leachate is less than 30%. Additionally, the maximum concentration cited in the leachate study was detected below the Illinois Class II groundwater standard (24 ug/l).

Barium (total)
Barium is commonly detected in groundwater from the presence of barium containing mineral deposits. Barium is detected in the majority of leachate samples collected but often not at concentrations above ambient groundwater concentrations. The major attenuation mechanisms for barium are adsorption, exchange, and precipitation. Barium also can be released from natural soils under reducing conditions or in presence of sulfate and may give false positive results. Additionally, the maximum concentration provided in the leachate study was detected below the Illinois Class I groundwater standard (2000 ug/l).

Beryllium (total)
Beryllium is rarely detected in the groundwater or MSW leachates. The major attenuation mechanisms are precipitation and exchange. Additionally, both maximum concentrations detected in the leachate and literature studies were below the Illinois Class II groundwater standard (500 ug/l).

Cobalt (total)
Detection frequency of cobalt leachate samples is less than 42%. It is thought that cobalt can coprecipitate or be absorbed by manganese and iron oxides (Fetter, 1999). In addition, both maximum concentrations detected in the leachate and literature studies were below the Illinois Class I groundwater standard (1000 ug/l).

Copper (total)
Sources of copper in the environment include natural deposits, industrial deposits, wood preserving, and plumbing. Copper was detected in most MSW leachate samples monitored. Copper is attenuated in the soil through exchange and adsorption mechanisms. Adsorption of copper occurs at a greater extent than for most other metals. The major attenuation mechanisms for copper are adsorption, exchange, and precipitation. In addition, both maximum concentrations detected in the leachate and literature studies were below the Illinois Class I groundwater standard (650 ug/l).

Nickel (total)
Nickel is detected in the majority of MSW leachate samples, but is generally not found in groundwater because it occurs mainly as insoluble hydroxides or sulfides. The major attenuation mechanisms are adsorption and precipitation. Additionally, the maximum concentration detected in the leachate study was detected below the Illinois Class II groundwater standard (2000 ug/l).

Selenium (total)
The detection frequency of selenium in MSW leachate is less than 44%. It is naturally occurring as mineral deposits in one of four oxidation states. The major attenuation mechanisms are adsorption and exchange but this varies with the selenium species, controlled by pH, redox, and soil composition. Additionally, the maximum concentration detected in the leachate study was detected below the Illinois Class I groundwater standard (50 ug/l).

Silver (total)
The detection frequency of silver in MSW leachate is less than 47%. Silver is generally not found in groundwater as it will form highly insoluble precipitates and is strongly adsorbed by clay, making it relatively immobile in soil. In addition, both maximum concentrations in the leachate and literature studies were detected at or below the Illinois Class I groundwater standard (50 ug/l).

Thallium (total)
The detection frequency of thallium in MSW leachate is less than 41%. Additionally, the maximum thallium concentration detected in the leachate study was below the Illinois Class II groundwater standard (20 ug/l).

Vanadium (total)
It is believed that in aqueous solutions (such as groundwater), vanadium may form ten different oxides and hydroxides and can react with dissolved iron to form insoluble precipitates (Fetter, 199). Vanadium also does not have an Illinois Class I or Class II groundwater standard.

The parameters proposed to be monitored quarterly in lieu of the above total metals include general water quality parameters as well as dissolved trace metals. Each of the proposed parameters is listed below along with some information about each parameter. In general, these inorganic parameters are less affected by natural processes and/or exist at better concentration contrast between leachate and background groundwater, which make them more effective and reliable detection monitoring parameters in comparison to total metals.

Ammonia (dissolved)
Ammonia is a common component of anaerobic decomposition common to landfills. Due to the anaerobic conditions in landfills (i.e., in the absence of oxygen), ammonia is present within leachate at significant concentrations above typical ambient background. Exceptions to this would include areas with agricultural sources or in poorly drained areas and swamps.

Arsenic (dissolved)
Arsenic is a common trace metal that is typically detected in both landfill leachate and natural groundwater. The detection frequency in landfill leachate for both of the above studies was 92%. Arsenic was reported in Illinois Community Water Supply Wells at an average concentration of approximately 1 ug/l (IEPA 2004), which is lower than the concentration reported in leachate in the above studies.

Boron (dissolved)
Boron is common in landfill leachate especially where ash has been accepted. Boron is also commonly detected in natural groundwater and was detected in Illinois Community Water Supply Wells at an average concentration of approximately 150 ug/l (IEPA 2004). Chemically unbound boron is readily soluble in water and behaves similarly to chloride. It is not readily retarded, adsorbed or chemically transformed in most environments.

Cadmium (dissolved)
Cadmium is considered a trace component of groundwater with a Class I GQS of 5 ug/l. Although the leachate study detection frequency was low (only 8%), the detection frequency in the literature study was 74% and the detected concentrations are likely above the Class I GQS. Cadmium sulfate ($CdSO_4$) has a very low solubility product, but cadmium can be mobile in certain conditions (Fetter, 1999).

Chloride (dissolved)
Chloride is generally regarded as one of the best indicator parameters. As stated in Fetter (1999), "chloride ions are not reactive. They do not participate in redox reactions, are not sorbed onto

mineral or organic surfaces, and do not form insoluble precipitates. Chloride is sometimes used as a tracer in groundwater studies because it is conservative."

Chromium (dissolved)
Chromium is considered a trace component of groundwater. Chromium is not typically detected in Illinois groundwater as less than 1% of samples from Illinois Community Water Supply Wells reported chromium above the reporting limit of 5 ug/l (IEPA 2004). The detection frequency in leachate for both studies was moderate, thus indicating that chromium is a commonly detected parameter in landfill leachate.

Cyanide (total)
Cyanide is a natural inorganic substance of health concern (MacKenzie *et al*, 1998).

Lead (dissolved)
Lead is considered a trace groundwater constituent. Lead is not typically detected in Illinois groundwater as less than 10% of samples from Illinois Community Water Supply Wells reported lead above the reporting limit of 5 ug/l (IEPA 2004). Conversely, the detection frequency of lead in the leachate study and literature data was greater than 65%.

Magnesium (dissolved)
US EPA funded a research project on the "Flood of 1993". The study was carried out by the Missouri Department of Natural Resources Solid Waste Management Program. The study identified magnesium as one of the best indicators of leachate migration.

Mercury (dissolved)
Mercury is considered a trace groundwater constituent. Mercury is not typically detected in Illinois groundwater as less than 1% of samples from Illinois Community Water Supply Wells reported mercury above the reporting limit of 0.1 ug/l (IEPA 2004). Mercury is not commonly detected in landfill leachate, however, mercury is proposed to be retained as a detection monitoring parameter due to its potential effects on human health and the environment.

Nitrate (dissolved)
Nitrate is a naturally occurring form of nitrogen that can be derived from both natural and manmade sources. The form that nitrogen takes in the environment is dependant on the presence or absence of oxygen. The nitrogen cycle dictates that nitrate is most prevalent in aerobic environments, whereas ammonia is present in anaerobic environments. As stated in *Lu et al* (1985), "if the soil/leachate system is aerobic, nitrification (mineralization) of organic nitrogen sources occurs readily, producing nitrate as an end product. Nitrate is mobile, moving readily with the soil solution into the lower vadose zone and ultimately into groundwater." Because nitrate is an anion and is negatively charged, it is not adsorbed by clay minerals or does not participate in ion exchange reactions. Thus, nitrate can be an effective detection monitoring

parameter in environments where other nitrogen sources are minimal and aerobic conditions are prevalent.

Sulfate (dissolved)

Sulfate is a naturally occurring form of sulfur, and, similar to the nitrogen discussion above, the form that sulfur takes in the environment is dependent upon the presence or absence of oxygen (excluding elemental sulfur). In anaerobic environments such as during the decomposition process in landfill environments, sulfate is not present as it is converted to sulfide. Sulfate can be a useful parameter in that in ambient groundwater it will typically decrease if the groundwater is impacted by leachate.

Total Dissolved Solids

Total dissolved solids (TDS) is a generic measurement of the total amount of minerals and nutrients that are dissolved (not merely suspended) in water. Because suspended solids increase with turbidity, total dissolved solids (TDS) is a better measure of the components of a solution as opposed to the suspended solids potentially disturbed during groundwater sampling. Leachates typically have a much higher TDS as opposed to ambient groundwater providing a good contrast for detection monitoring purposes. It is also useful for checking the accuracy of field specific conductance readings.

Zinc (dissolved)

Zinc is considered a trace constituent in groundwater. Zinc is not typically detected in Illinois groundwater as less than 5% of samples from Illinois Community Water Supply Wells reported zinc above the reporting limit of 100 ug/l (IEPA 2004). Conversely, the detection frequency of zinc in the leachate study and literature data was greater than 90%.

Additionally, the new proposed program includes expanded VOC monitoring. Volatile organic compounds (VOCs) are highly detectable and generally non-naturally occurring so as to be superior detection monitoring parameters when compared to the total metals.

Given our experience in administering the current groundwater monitoring program in Illinois, elimination of the above listed 40 CFR Part 258, Appendix I, unfiltered heavy metals will not have a deleterious effect on groundwater monitoring programs in Illinois. Rather focusing in on certain inorganic parameters and VOCs shown to be reliable indicators of a release will enhance the detection monitoring programs by curtailing the false positive rate.

Thank you for assistance and consideration of this matter. If you should have any questions please feel free to contact me.

Sincerely,

Stephen F. Nightingale, P.E.
Manager, Permit Section
Bureau of Land

SFN:GT:bjh\061231s.doc

bcc: DLC-Kim Geving
Steve Nightingale
Chris Liebman
Gwenyth Thompson

References

Christensen, T.H., Kjeldsen, P., Albrechtsen, H-J., Heron, B. Nielsen, P.H., Bjerg, P.L., Holm, P.E., 1994, Attenuation of Landfill Leachate Pollutants in Aquifers: Critical Reviews in Environmental Science and Technology, 24(2):119-202.

Davis, J.A., et al. 1993. Influence of Redox Environment and Aqueous Speciation on Metal Transport in Groundwater: Preliminary Results of Trace Injection Studies, in: Metals in Groundwater, Allen, H.E., et al. editors. Lewis Publishers.

Davis, MacKenzie L. and D. A. Cornwell, 1998. Introduction to Environmental Engineering. WCB McGraw-Hill, Boston, Massachusetts.

Dragun, J., 1988. The Soil Chemistry of Hazardous Materials. Hazardous materials Control research Institute, Silver Springs, Maryland.

Fetter, C.W., 1999. Contaminant Hydrogeology. Prentice Hill, Upper Saddle Hill, New Jersey

Freeze, R. Allan and J. Cherry, 1979. Groundwater. Prentice-Hall, Inc., Englewood Cliffs, New Jersey.

Gibbons, R.D., and Sara M., 1995. Statistical comparison of Metal Concentrations in Filtered and unfiltered Ground-water Samples. In: Ground Water Sampling—A Workshop Summary. EPA/600/R-94/205

Illinois Environmental Protection Agency, Bureau of Water. Illinois Water Quality Report, 2004. May 2004

Kjeldsen, P., Barlaz, M. A., Rooker, A.P., Baun, A., Ledin, A., Christensen, T.H., 2002, "Present and Long-Term Composition of MSW Landfill Leachate: A Review, Environmental Science and Technology, 32(4), 297-336.

Lu, James C.S, B. Eichenberger, and R. Stearns, 1985. Leachate From Municipal Landfills Production and Management. Noyes Publications, Pak Ridge, New Jersey.

RUST E&I, 1995. Leachate Characterization Study.
Lewis Publishers.

ATTACHMENT I

Parameter	Storet
Acetone	81552
Acrolein	34210
Acrylonitrile	34215
Alachlor	77825
Aldicarb	39053
Aldrin	39330
Aluminum	01105
Ammonia (as N) (mg/L)	00610
Antimony	01097
Arsenic	01002
Atrazine	39033
Barium	01007
Benzene	34030
Benzo(a)Pyrene	34247
Beryllium	01012
BOD (mg/L)	00310
Boron	01022
Bromobenzene	81555
Bromochloromethane (chlorobromomethane)	77297
Bromodichloromethane	32101
Bromoform (Tribromomethane)	32104
Bromomethane (Methyl Bromide)	34413
n-Butylbenzene	77342
sec-Butylbenzene	77350
tert-Butylbenzene	77353
Cadmium	01027
Calcium (mg/L)	00916
Carbofuran	81405
Carbon Disulfide	77041
Carbon Tetrachloride	32102
Chemical Oxygen Demand (COD) (mg/L)	00335
Chlordane	39350
Chloride (mg/L)	00940
Chlorobenzene	34301
Chloroethane (Ethyl Chloride)	34311
Chloroform (Trichloromethane)	32106
Chloromethane (Methyl Chloride)	34418
o-Chlorotoluene	77275
p-Chlorotoluene	77277
Chromium	01034
Chlorodibromomethane (Dibromochloromethane)	32105

Parameter	Storet
Cobalt	01037
Copper	01042
p-Cresol	77146
Cyanide (mg/L)	00720
Dalapon	38432
DDT	39370
Dibromomethane (Methylene Bromide)	77596
m-Dichlorobenzene (1,3 Dichlorobenzene)	34566
o-Dichlorobenzene (1,2 Dichlorobenzene)	34536
p-Dichlorobenzene (1,4 Dichlorobenzene)	34571
Dichlorodifluoromethane	34668
Dichloromethane (Methylene Chloride)	34423
Dieldrin	39380
Diethyl Phthalate	34336
Dimethyl Phthlate	34341
Di-N-Butyl Phthlate	39110
Dinoseb (DNBP)	81287
Endothall	38926
Endrin	39390
Di(2-Ethylhexyl)Phthalate	39100
Ethylbenzene	78113
Ethylene Dibromide (EDB)(1,2-Dibromo ethane)	77651
Fluoride (mg/L)	00951
Heptachlor	39410
Heptachlor Epoxide	39420
Hexachlorobutadiene	39702
Hexachlorcyclopentadiene	34386
Iodomethane (Methyl Iodide)	77424
Iron	01045
Isophorone	34408
Isopropylbenzene	77223
p-Isopropyltoluene	77356
Lead	01051
Lindane	39782
Magnesium (mg/L)	00927
Manganese	01055
Mercury	71900
Methoxyclor	39480
Naphthalene	34696
Nickel	01067
Nitrate-Nitrogen (mg/L)	00620
Oil(Hexane-Soluble or Equivalent) (mg/L)	00550

Parameter	Storet
Parathion	39540
Pentachlorophenol	39032
pH	00400
Phenols	32730
Picloram	39720
Polychlorinated Biphenyls	39516
Potassium (mg/L)	00937
n-Propylbenzene	77224
Selenium	01147
Silver	01077
Simazine	39055
Sodium (mg/L)	00929
Styrene	77128
Sulfate (mg/L)	00945
TOC (mg/L)	00680
Tetrachloroethylene (Perchloroethylene)	34475
Tetrahydrofuran	81607
Thallium	01059
Toluene	34010
Toxaphene	39400
Trichloroethylene (Trichloroethene)	39180
Trichlorofluoromethane	34488
Vanadium	01087
Vinyl Chloride	39175
Vinyl Acetate	77057
Xylenes	81551
m-Xylene	77134
o-Xylene	77135
p-Xylene	77133
Zinc	01092
1,1,1,2-Tetrachloroethane	77562
1,1,1-Trichloroethane (Methylchloroform)	34506
1,1,2,2-Tetrachloroethane	34516
1,1,2-Trichloroethane	34511
1,1-Dichloroethane	34496
1,1-Dichloroethylene	34501
1,1-Dichloropropene	77168
1,2,3-Trichlorobenzene	77613
1,2,3-Trichloropropane	77443
1,2,4-Trichlorobenzene	34551
1,2,4-Trimethylbenzene	77222
1,2-Dibromo-3-Chloropropane (DBCP)	38760

Parameter	Storet
cis-1,2-Dichloroethylene	77093
trans-1,2-Dichloroethylene	34546
1,2-Dichloroethane	34531
1,2-Dichloropropane (Propylene Dichloride)	34541
1,3,5-Trimethylbenzene	77226
1,3-Dichloropropane	77173
1,3-Dichloropropene	34561
cis-1,3-Dichloropropene	34704
trans-1,3-Dichloropropene	34699
trans-1,4-Dichloro-2-Butene	49263
2,2-Dichloropropane	77170
2,4,5-TP (Silvex)	39760
2,4-Dichlorophenoxyacetic Acid (2,4-D)	39730
2-Butanone(Methyl Ethyl Ketone)	81595
2-Hexanone (Methyl Butyl Ketone)	77103
4-Methyl-2-Pentanone (Methyl Isobutyl Ketone)	78133

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ATTACHMENT II

Parameter

Acetone
Acrylonitrile
Benzene
Bromobenzene
Bromochloromethane
Bromodichloromethane
Bromoform; Tribromomethane
n-Butylbenzene
sec-Butylbenzene
tert-Butylbenzene
Carbon disulfide
Carbon tetrachloride
Chlorobenzene
Chloroethane
Chloroform; Trichloromethane
o-Chlorotoluene
p-Chlorotoluene
Dibromochloromethane
1,2-Dibromo-3-chloropropane
1,2-Dibromoethane
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
trans-1,4-Dichloro-2-butene
Dichlorodifluoromethane
1,1-Dichloroethane
1,2-Dichloroethane
1,1-Dichloroethylene
cis-1,2-Dichloroethylene
trans-1,2-Dicloroethylene
1,2-Dichloropropane
1,3-Dichloropropane
2,2-Dichloropropane
1,1-Dichloropropene
1,3-Dichloropropene
cis-1,3-Dichloropropene
trans-1,3-Dichloropropene
Ethylbenzene
Hexachlorobutadiene
2- Hexanone; Methyl butyl ketone
Isopropylbenzene

Parameter

p-Isopropyltoluene
Methyl bromide; Bromomethane
Methyl chloride; Chloromethane
Methylene bromide; Dibromomethane
Dichloromethane
Methyl ethyl ketone
Methyl iodide; Iodomethane
4-Methyl-2-pentanone
Naphthalene
Phenols
n-Propylbenzene
Styrene
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane|
Tetrachloroethylene
Tetrahydrofuran
Toluene
1,2,3-Trichlorobenzene
1,2,4-Trichlorbenzene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethylene
Trichlorofluoromethane
1,2,3-Trichloropropane
1,2,4-Trimethylbenzene
1,3,5-Trimethylbenzene
Vinyl acetate
Vinyl chloride
Xylenes

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BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
PROPOSED AMENDMENTS TO	)	
SOLID WASTE DISPOSAL LANDFILL RULES	)	R 07-8
	)	(Rulemaking – Land)
(35 Ill. Adm. Code 810 and 811)	)	
	)	
	)	

TESTIMONY OF CHRISTIAN J. LIEBMAN

My name is Christian J. Liebman. I am the Manager of the Solid Waste Unit in the Permit Section within the Bureau of Land of the Illinois Environmental Protection Agency. I have been in my current position since February 1999. From June 1985, until I assumed my current position, I was a permit reviewer in the unit I now manage. In 1984, I received a B.S. in Geological Engineering from University of Missouri at Rolla and, in 2002, I received an M.S. in Civil Engineering from Southern Illinois University at Carbondale. I am licensed in the State of Illinois as both a Professional Engineer and a Professional Geologist. My resume is attached. Today, I will be testifying in support of the proposed changes to 35 Ill. Adm. Code Parts 810 and 811, specifically Sections 811.309(g)(1), 811.309(g)(2)(G), 811.309(g)(3)(D), 811.309(g)(4), 811.309(g)(5) and 811.Appendix C. This testimony also responds to an issue the Board raised in the first hearing on this rulemaking, regarding unpermitted, on-site landfills.

I. OVERVIEW

Leachate monitoring can help determine the degree to which a landfill poses a threat to the groundwater by ascertaining what types of contaminants are leaching out of the wastes that have been disposed in the landfill and in what concentrations. The changes to the leachate monitoring requirements of 35 Ill. Adm. Code Part 811 proposed in this rulemaking are intended,

primarily, to: 1) provide clarification regarding the constituents for which leachate should be monitored; and 2) ensure that leachate monitoring systems are capable of detecting spatial variability. These changes were initially suggested by the Agency.

II. LEACHATE MONITORING PARAMETERS

In administering the leachate monitoring requirements of 35 Ill. Adm. Code Part 811, the Illinois EPA has taken the position that the parameters for which groundwater is monitored should be a subset of the parameters for which leachate is monitored. That is, we have required leachate from permitted solid waste landfills to be monitored for all the parameters for which groundwater must, by regulation, be monitored and essentially all other parameters that may, according to the literature, be found in leachate.

Since the Agency began permitting landfills under 35 Ill. Adm. Code Parts 810-814 in the early 1990's, we have consistently employed the approach described above. We believe that our practices have a sound technical basis, but the current regulatory basis for it may be less solid. While 35 Ill. Adm. Code 811.319(a)(2)(A)(i) supports our approach, 35 Ill. Adm. Code 811.309(g), as currently written, could be read to mean that leachate can be monitored for a much shorter list of parameters than we have been requiring. The proposed amendments would codify the approach we have been using.

The clarification regarding leachate monitoring parameters is made through the proposed amendments to Sections 811.309(g)(1), 811.309(g)(2)(G), 811.309(g)(3)(D) and the addition of Appendix C [Referred to as Proposed Amendments 4, 5, 6 and 9 in the filing].

III. SPATIAL VARIABILITY

Within a landfill, leachate quality can vary from one area to another. The causes of this spatial variability include differences in the age of the wastes and, therefore, differences in the

degree to which they have decomposed and stabilized, differences in the types of waste disposed from one area to another, and differences in the volume of water percolating through the waste -- -- e.g., much more water would be expected to percolate through the waste at the active face than through waste in an area over which final cover has been applied.

Leachate quality data from a leachate monitoring program that is not capable of detecting spatial variability may underestimate the strength of the leachate from some areas of the landfill. Also, in some cases, constituents contained in the leachate produced in one area of the landfill may not be detected at all due to dilution by leachate from other areas.

Although the Agency has long recognized that leachate monitoring networks capable of detecting spatial variability are desirable, we have admittedly been less than consistent in requiring permitted landfills to have such systems. As a result, at least one landfill now has literally dozens of leachate monitoring points, while others have only one. The proposed changes will ensure that new landfills either have the capability of detecting leachate variability (provided there is a minimum of four leachate monitoring points or one for every 25 acres of waste footprint)-- or the landfill operator has demonstrated to the Agency's satisfaction that fewer leachate monitoring points are needed due to site specific circumstances.

The change specifying the minimum number of leachate monitoring points is made by the addition of Section 811.309(g)(4) [Referred to as Proposed Amendment 7 in the filing].

IV. FREQUENCY OF LEACHATE SAMPLING

Under the current regulations, each leachate monitoring point at a landfill is initially sampled quarterly, and after eight rounds of quarterly sampling the frequency of sampling is decreased to semi-annually. The proposed amendments do not require the initial quarterly sampling; instead, they require semi-annual leachate monitoring from the start, with each

monitoring point being sampled at least once every two years. Thus, under the proposed amendments, at a landfill with four leachate monitoring points, every six months one of the points would be sampled.

The reduction in the frequency of leachate sampling, as set forth in the proposed amendments, was offered by the Agency in exchange for the NSWMA's support of the specified list of leachate monitoring parameters and the minimum number of leachate monitoring points. The proposed frequency is sufficient to adequately characterize leachate, and it also provides more equality between landfills that have many leachate monitoring points and those with fewer. For example, under the current regulations, a landfill with four leachate monitoring points must perform four times as much leachate sampling as a landfill with one point. Under the proposed amendments, two such landfills would do the same amount of leachate sampling.

The changes regarding the frequency of leachate monitoring are made through the proposed amendment to Section 811.309(g)(1) and the addition of Section 811.309(g)(5) [Referred to as Proposed Amendments 4 and 8 in the filing].

V. UNPERMITTED, ONSITE LANDFILLS

In the January 29, 2007 hearing on this rulemaking, the Board asked if the Agency could produce a list of unpermitted, onsite landfills that are regulated under 35 Ill. Adm. Code Part 815. Attachment 1 to this testimony is offered in response to this request. It is a list of the unpermitted, onsite landfills that the Agency's Bureau of Land/Planning and Reporting Section is aware of and to which "On-Site Permit Exempt '815' Facility, Annual Report" forms are sent each year.

VI. CONCLUSION

In closing, I would like to thank the members of the NSWMA for their hard work and

perseverance in pursuing this rule change. I would also like to thank the Board for its consideration of these changes.

ATTACHMENT 1: List of Unpermitted, On-Site Landfills Regulated Under Part 815

RESUME OF

CHRISTIAN J. LIEBMAN

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Springfield, Illinois 62974-9276
(217) 524-3294

EDUCATION

M.S., May 2002, Civil Engineering from Southern Illinois University-Carbondale, Carbondale, IL, Major: Civil Engineering

B.S., May 1984, University of Missouri - Rolla, Rolla, MO, Major: Geological Engineering

WORK EXPERIENCE

02/99 -- Present *Solid Waste Unit Manager in the Illinois Environmental Protection Agency's Bureau of Land, Division of Land Pollution Control, Permit Section. The job consists of supervising the 12 engineers who are responsible for reviewing the permit applications for all the solid waste landfills and clean construction and demolition debris fill operations in the State of Illinois, subject to the BOL permit process. The primary job objective of this position is to ensure that these permit applications are given consistent, high-quality reviews in a timely manner.*

06/85 -- 02/99 *Permit Reviewer in the Illinois Environmental Protection Agency's Bureau of Land, Division of Land Pollution Control, Permit Section, advancing from an Environmental Protection Engineer I to Environmental Protection Engineer III. The job entailed reviewing permit applications for solid waste landfills, transfer stations and waste composting facilities, comparing the proposals made in the applications to the regulatory and statutory requirements and then drafting preliminary responses (either permits with conditions or denials) for management approval.*

PROFESSIONAL LICENSES

Licensed Professional Engineer in the State of Illinois (License No. 062-049263).

Licensed Professional Geologist in the State of Illinois (License No. 196-000989).

ATTACHMENT 1: LIST OF UNPERMITTED, ON-SITE LANDFILLS REGULATED UNDER PART 815

BOL Site No.	Contact Name	Facility Name	Address			
0316000016	Anthony Gianello	Chicago Regional Port Dist.	111th & Calumet Expressway	Chicago	IL	60633
0316550015	Donald F. Schroud	Schroud Property	12601 Carondolet Ave.	Chicago	IL	60633
0330255019	Larry Carpenter	Robinson Carbon Inc.	12187 E. 950th Ave.	Robinson	IL	62454
0638135001	Becky Yonker	ETI/American East	7700 W. DuPont Rd. - B	Morris	IL	60450
0850200011		Renissance Restoration	1230 Ferry Landing Road	Galena	IL	61036
0950050004	Gerry Allen	Gerry Allen Solid Waste Site	RR 1, Box 221	Abingdon	IL	61410
0971900014	B. J. Lemonier	Johns Manville Intl. Inc.	1871 N. Pershing Rd.	Waukegan	IL	60087
0990700003	Rick Moore	Lone Star Industries Inc.	Portland Ave.	Oglesby	IL	61348
1030205037		Dixon Marquette Cement Co.	1914 White Oak Lane	Dixon	IL	61021
1190405005	Doug Stracke	ASF-Keystone Inc	1700 Walnut St.	Granite City	IL	62040
1190405085	R. D. Mitchem	Illinois American Water Co.	2000 W. 24th	Granite City	IL	62040
1278540002	Darrin Dodge	Honeywell Intl. Inc.	2768 US 45 Rd.	Metropolis	IL	62960
1278550002	Sheri Tucker	Lafarge Corp.	2500 Portland Rd.	Grand Chain	IL	62941
1438050004	E. L. Gramme	Caterpillar Inc. - Mapleton Plant	8826 West, Route 24	Mapleton	IL	61647-9799
1631050002	Bruce Steinkamp	Wirco Castings Inc.	8801 New Athens-Darmstadt	New Athens	IL	62264
1838040020	Andrew H. Green	VA Medical Center	1900 E. Main St.	Danville	IL	61832
1838040024	Daniel R. Feezor, PE	General Motors Landfill	I-74 at G St.	Danville	IL	61832
1950500001	Dale Vandevelde	Northwestern Steel & Wire	121 Wallace St.	Sterling	IL	61081
1950500004	Art Gann	Frantz Mfg. Co., Steel Ball Div.	3809 W. Lincoln Hwy.	Sterling	IL	61081
1970505170	John G. Nanna	J. W. Peters & Sons Inc.	551 S. Independence Blvd.	Lockport	IL	60441
1990555005	Leonard F. Hopkins	Southern Illinois Power	10825 Lake of Egypt Rd.	Marion	IL	62959
2010450005	Lawrence Turner	Price Brothers Co.	4416 Prairie Hill Rd.	South Beloit	IL	61080
2010450016	Hagan H. Harker	Mid-States Concrete Products	500 S. Park Ave.	South Beloit	IL	61080

STATE OF ILLINOIS)
)
COUNTY OF SANGAMON)

PROOF OF SERVICE

I, the undersigned, on oath state that I have served the attached Pre-filed

Testimony of Gwenyth Thompson and Christian J. Liebman upon the persons to whom they are directed, by placing a copy of each in an envelope addressed to:

Dorothy Gunn, Clerk
Illinois Pollution Control Board
James R. Thompson Center
100 W. Randolph, Suite 11-500
Chicago, Illinois 60601

Bill Richardson, General Counsel
Illinois Dept. of Natural Resources
One Natural Resources Way
Springfield, Illinois 62702-1271

Matt Dunn
Environmental Bureau Chief
Office of the Attorney General
James R. Thompson Center
100 W. Randolph, 12th Floor
Chicago, Illinois 60601

Timothy J. Fox
Illinois Pollution Control Board
100 W. Randolph St.
Suite 11-500
Chicago, Illinois 60601

and mailing them (First Class Mail), with the exception that it sent via COOL to the Clerk of the Illinois Pollution Control Board, from Springfield, Illinois on February 14, 2007, with sufficient postage affixed as indicated above.

Kimberly A. Hamm

SUBSCRIBED AND SWORN TO BEFORE ME
This 14th day of February, 2007.

Brenda Boehner
Notary Public

OFFICIAL SEAL
BRENDA BOEHNER
NOTARY PUBLIC, STATE OF ILLINOIS
MY COMMISSION EXPIRES 11-3-2009

THIS FILING SUBMITTED ON RECYCLED PAPER