

**Final Report: Michigan Environmental Results Program (ERP) for the
Dry Cleaning Sector**

Appendix A

**Michigan Environmental Results Program
Statistical Analysis**

Prepared by:

Richard Krop, The Cadmus Group, Inc.

**with support from Michael Crow and
Dr. A. Richard Bolstein (consultants)**

April 2009

Analysis of the Michigan Department of Environmental Quality Retail Dry Cleaner ERP Inspection Data

The Michigan Department of Environmental Quality (DEQ) is implementing an Environmental Results Program (ERP) for retail dry cleaners. The DEQ conducted inspections of two different samples of dry cleaners that use perchlorate solvents. Baseline inspections were conducted for a sample of 262 establishments. Dry cleaners were then given the opportunity to voluntarily self-certify their environmental performance. Follow-up inspections were conducted at a second random sample of 272 establishments after self-certification. During both rounds of inspections, the DEQ collected data on a large number of environmental business practices. The inspections assess facilities against a checklist of practices, indicating which ones are being used at each facility. The primary objective of the program is the protection of air and water quality. Secondary objectives include control of hazardous waste for underground injection control and addressing brownfield issues.

1. Description of the Data

The data from the two rounds of inspections along with the self-certification results were provided by DEQ. The check list question numbers are not the same in the two rounds of inspections. The question numbers from the second round were used for this analysis. (Questions that were in the baseline but not the follow-up round of inspections were renumbered and added the list of questions.) A consolidated data base was created that combined the data from the two rounds in a consistent format. Exhibit 1 shows the questions and their numbers in the combined dataset.

The data were provided by DEQ in the Access data file "Dry Cleaners Audit Results.mdb," dated March 4, 2009. The data were imported into Stata for the analysis. The baseline inspection responses were 1 for "Yes", 2 for "No", or 3 for "N/A". Some questions were left blank as well. Yes responses were coded as 1 in the analytical file; No's were recorded as zeros. Special codes were created for N/A and blanks. The follow-up inspection data used the same coding. Responses for two establishments for one question each was "yh." This response was recoded as blank. (This is consistent with the treatment of this response in the summary of the data provided by DEQ.)

Self-certification data also were provided in the same Access file. Unlike the baseline and follow-up data, the self-certification responses are recorded as Yes or No. The data were recoded into numeric form—Yes was coded as 1 and No was coded as 0.. As with the inspection data, "yh" were recoded as blanks. "N/A", "N/", and "n/a" were all coded as "N/A". Several other responses also were recorded: "b", "ky", "t", and "u". These were given a separate code of "Other" and were treated like blanks.

The data provided were in the "wide" format: there was one record for each establishment and one variable for each question. The data were reshaped for the analysis. Each establishment has multiple rows in the new data set, one row for each question. The responses to the questions are shown in a single field, and a new field indicates which question each response corresponds to. The baseline and follow-up inspection data are stored in one dataset. The self-certification data are in a separate data set. Exhibit 2 shows the variables in the combined dataset.

2. Analysis of Results

2.1. Sample Design and Analysis

Stratified random samples were drawn in each round of inspections. The baseline inspections were divided into four strata, one for each inspector based largely on geographic region. The baseline sample size by strata is:

Strata (Inspector)	Sample Size
Jack	49
Joe	77
Jong	89
Karl	47
Total	262

The follow-up inspections were divided into eight strata. The additional strata were necessary because one of the inspectors dropped out of the second round of inspections. The eight strata represent a cross-tabulation of two groups of inspectors: the inspectors that were originally scheduled to conduct the follow-up inspections and the inspectors that carried out the follow-up inspections. The follow-up sample by strata is:

Strata		Sample Size
Scheduled Inspector	Actual Inspector	
Jack	Jack	38
Karl	Jack	21
Joe	Joe	82
Jong	Joe	26
Jong	Jong	8
Jack	Jong	22
Joe	Jong	50
Karl	Jong	25
Total		272

The estimated proportions and scores reflect these sample designs. The estimates are weighted by the inverse of the selection probabilities. The estimates of the standard error reflect the sampling strata and incorporate a finite population correction.

Three sets of analyses were conducted on each round of inspections. The first analysis examines the proportion of establishments that responded yes to each question on the check list. The second analysis looks at a facility-based score that is based the responses to a subset of the check list questions. The third analysis looks at aggregate achievement rates using the same subset of questions. The results are reported for each round with a 90 percent confidence interval. The differences between rounds also are reported, again with a 90 percent confidence interval.

Estimates of the confidence intervals for the proportions use the normal approximation of the binomial distribution. (Cochran, p. 107.) The estimates of the facility-based score and its confidence interval assumes the score is a continuous variable. (Cochran, p. 107.) A ratio estimate is used to estimate the aggregate achievement rate. (Cochran, p. 150.) Differences between the two rounds of inspections assume the two samples are independent with unequal variances. (Snedecor and Cochran, p. 96.)

The self-certification data also are available. The establishments that self-certified are treated as a census of self-certifiers; therefore, there is no sampling error associated with these estimates and no confidence intervals are provided. Estimates of the proportion of self-certifiers that responded Yes to each question is reported, along with facility scores and aggregate achievement rates.

The analysis was conducted using Stata, version 10.0. The results were exported to Excel for presentation. The results are in the file MichiganResults(*version number*).xls. The analyses are contained in separate tabs within each workbook, as described below.

2.2. Analysis of Each Round of Inspections

2.2.1. Analysis of Proportional Data

The number of establishments that answered No, Yes, N/A, or left the response blank is reported for each question in both rounds. The number of valid observations—those that answered No or Yes—also is shown. The design-based estimate of the proportion and the 90 percent confidence interval is shown for each question in each round. The difference between the two rounds and the 90 percent confidence interval for the difference is shown for each question as well. Differences between rounds that are statistically significant are indicated. The results are shown in the tab “Round 1 and Round 2 Proportions.”

The check list included three questions to determine whether establishments are improperly emptying wastewater into drains that flow to wastewater treatment plants. Question 5-1 asks whether the establishment is connected to a sewer system. If it is, the establishment is in question 5-2 asked whether it empties wastewater from the dry cleaning machine to a drain, sink, or toilet. Question 5-3 asks if the system has permission from the wastewater treatment plant to dispose of the wastewater from the dry cleaning equipment. The establishment is considered to be in compliance if it does not empty the wastewater into a drain, sink, or toilet, or if it has permission to do so. The proportions sheet includes the proportion of systems that are in compliance.

2.2.2. Analysis of Facility-Based Scores and Aggregate Achievement Rates

An EBPI score was created for each facility. The score is equal to the number of good responses on EBPI measure questions divided by the total number of EBPI measure questions. The EBPI measure questions are:

1-4
1-7
1-19
3-3
3-10
3-22
5-2 and 5-3

Question 5-2 asks whether the establishment empties wastewater from dry cleaning machines into a drain, toilet, or sink. Question 5-3 asks whether the establishment has permission from their wastewater treatment to do so. Together, these two variables whether the establishment is in compliance. If they answered “No” to 5-2 or they answered “Yes” to 5-3, the establishment is considered to be in compliance and receives a “good” score for its facility score.

The deciles, the mean, and 90 percent confidence for the mean are presented for the facility score for each round. The mean difference between the two rounds and the 90 percent confidence interval for this difference are presented as well. The results are shown in the tab “Round 1 and Round 2 Scores.”

An aggregate achievement rate is constructed based on the EBPI measure. The same questions used to build the facility-based score are used for to develop this achievement rate. The achievement rate is the ratio of the good responses to all responses, across all establishments. The ratio—and 90 percent confidence intervals—were computed. The difference in between rounds and the 90 percent confidence interval for the differences are also computed. The results are shown in the tab “Round 1 and Round 2 Scores.”

2.3. Analysis of Self-Certification Data

2.3.1. Analysis of Proportional Data

The number of establishments that answered No, Yes, N/A, left the response blank, or had another response is reported for each question. The number of valid observations—those that answered No or Yes—also is shown. The estimate of the proportion of self-certifiers with valid responses that responded Yes is shown for each question. The results are shown in the tab “Self-Certification Proportions.”

2.3.2. Analysis of Facility-Based Scores and Aggregate Achievement Rates

The EBPI score was created for each facility. As with the inspection data, the score is equal to the number of good responses on EBPI measure questions divided by the total number of EBPI measure questions. The deciles and the mean are presented. The results are shown in the tab “Self-Certification Scores.”

The aggregate achievement rate is constructed based on the EBPI measure. The same questions used to build the facility-based score are used for to develop this achievement rate. The achievement rate is the ratio of the good responses to all responses, across all establishments. The results are shown in the tab “Self-Certification Scores.”

3. References

Cochran, W. G. 1977. *Sampling Techniques*, 3rd Edition, New York: Wiley.

Snedecor, G. W., and W. G. Cochran. 1989. *Statistical Methods*, 8th Edition, Iowa: Iowa State Press.

Exhibit 1. Check List Items

Round 1 Question Number	Round 2 Question Number	Question Text	Included in EBPI Score
1-1	1-1	Is the Machine operated according to manufacturers' specifications?	No
1-2	1-2	Are machine operating manuals kept on site?	No
1-3	1-3	Is the dry cleaning machine door kept closed, except for loading and unloading?	No
1-4	1-4	Does facility keep a log of the gallons of perc purchased each month?	Yes
1-5	1-5	Are all perc purchase logs kept on file for five years?	No
1-6	1-6	Are all cartridge filters drained 24 hours before removal?	No
1-7	1-7	Are specified components of the machine inspected weekly/bi-weekly for perceptible leaks?	Yes
	1-8	Are specified components inspected monthly for vapor leaks while in operation with a halogenated hydrocarbon detector PCE gas analyzer?	No
1-8	1-9	If a leak is detected, is it repaired in 24 hours or if it cannot be repaired in 24 hours are parts ordered within 2 working days and installed within 5 days of receiving them?	No
1-9	1-10	does facility keep a log of the date of any necessary repairs made to the machine?	No
1-10	1-11	Does facility keep a log of machine inspections that identifies any components that are leaking?	No
1-11	1-12	Small Area Source? Dry-to-dry machine installed before 12/9/91 AND did facility purchase less than 140 gallons of perc per year during all previous 12-month periods?	No
1-12	1-13	Do all dry-to-dry machines installed before 12/9/91 have an external refrigerated condenser OR a carbon adsorber that was installed prior to 9/22/93? (Choose N/A if machine installed after 12/9/91)	No
1-13	1-14	Do all dry-to-dry machines installed after 12/9/91 have an internal refrigerated condenser? (Choose N/A if machine installed before 12/9/91)	No
1-14	1-15	Do all dry-to-dry machines initially installed after 12/21/05 have an internal carbon adsorber AND refrigerated condenser? (Choose N/A if machine installed before 12/21/05)	No
	1-16	If major source, is concentration of perc in the machine drum at the end of the cycle measured weekly with a colorimetric detector tube or PCE gas analyzer? (choose N/A if not major source)	No
	1-17	Is the concentration of perc less than 300 ppm?	No
	1-18	Are the external refrigerated condensers on a vented machine routed properly so the air-perc stream is not vented directly to atmosphere while drum is rotating?	No
1-15	1-19	Is the outlet temperature of the vapor stream passing through the cooling coil (refrigerated condenser) read weekly and is it equal to or less than 45deg F (±2° F) or	Yes

Exhibit 1. Check List Items

Round 1 Question Number	Round 2 Question Number	Question Text	Included in EBPI Score
		7.2deg C (± 1.1 degC)?	
	1-20	Are the high and low pressures of the refrigeration system read and recorded on a weekly basis? (Choose N/A if no pressure gauges)	No
	1-21	Are the pressures within those specified by the manufacturer? (Choose N/A if no pressure gauges)	No
1-16	1-22	Is the date, temperature sensor or pressure gauge monitoring results recorded weekly?	No
1-17	1-23	Is the date, temperature sensor or pressure gauge monitoring results kept on file for five years?	No
	1-24	Is the machine equipped with an external carbon adsorber?	No
1-18	1-25	If an external carbon adsorber is installed on a vented machine, is none of the air-perchloroethylene gas-vapor stream allowed to bypass the carbon adsorber to the atmosphere?	No
1-19	1-26	Is the concentration of perc in the exhaust of the external carbon adsorber measured weekly using a colorimetric detector tube or PCE gas analyzer?	No
1-20	1-27	Is the concentration of perc in the exhaust of the external carbon adsorber less than 100 parts per million per volume?	No
1-21	1-28	Are the date and colorimetric detector tube monitoring results recorded weekly?	No
1-22	1-29	Are the date and colorimetric detector tube monitoring results kept on file for 5 years?	No
1-23	1-30	Are necessary repairs made to the refrigerated condenser and/or carbon adsorber?	No
	1-31	Was a Notification of Compliance Status Form submitted to the MDEQ?	No
1-24	1-32	Has the facility paid their air quality fee?	No
1-25	1-33	Has the facility paid their MDEQ Dry Cleaning License Fee?	No
2-1	2-1	Does the facility have a dry cleaning machine that uses a petroleum solvent?	No
2-2	2-2	Is the TOTAL manufacturers' rated dryer capacity for all dryers used for petroleum solvent equal to or greater than 84 pounds (38 kilograms)? (see explanation below) AND Was the equipment installed after December 14, 1982?	No
2-3	2-3	Is the filter a cartridge filter?	No
2-4	2-4	Are cartridge filters drained in their sealed housings for at least eight hours prior to their removal?	No
2-5	2-5	Is leak inspection and leak repair cycle information in the operating manual and on a clearly visible label posted on the dryer?	No
2-6	2-6	Was the dryer installed between December 14, 1982	No

Exhibit 1. Check List Items

Round 1 Question Number	Round 2 Question Number	Question Text	Included in EBPI Score
		and September 21,1984	
2-7	2-7	Does facility use more than 4,700 gallons (17,791 liters) of solvent per year?	No
2-8	2-8	Is the dryer a solvent recovery dryer?	No
2-9	2-9	Was an initial performance test conducted to verify that the flow rate of recovered solvent from the solvent recovery dryer at the termination of the recovery cycle is no greater than 0.05 liters per minute?	No
2-10	2-10	Does the facility have a copy of the initial performance test?	No
3-1	3-1	Does facility generate less than 220 pounds of hazardous waste per month?	No
3-2	3-2	Does facility have a site identification number when needed for waste shipment? (Choose N/A if you do not ship waste off-site)	No
3-3	3-3	Does each shipment of hazardous waste or liquid industrial waste have a manifest or receipt from the waste hauler that identifies manifest number and the type and quantity of waste shipped?	Yes
3-4	3-4	Is the waste properly listed on the manifest form (e.g., F002) and is the quantity shipped entered on the manifest form?	No
3-5	3-5	Has a copy of each manifest been signed by the waste hauler and submitted to the MDEQ by the 10th of the month following the shipment?	No
3-6	3-6	Are all copies of the manifest that are signed by the hauler and disposal facility kept on file for at least 3 years?	No
3-7	3-7	Is each storage container labeled with the name of the contents (e.g., perc waste, filters) and is the label readable? Container may be labeled using purchased labels, a stencil, or the completed shipping label.	No
3-8	3-8	Is each container that is being shipped labeled according to the US DOT Shipping requirements? (E.g. does it have a completed US DOT shipping label?)	No
3-9	3-9	Is less than 2,200 pounds (5 drums) of hazardous waste accumulated on site?	No
3-10	3-10	Are containers in good condition and kept closed except when adding or removing waste?	Yes
3-11	3-11	Is the exterior of the storage containers kept free of the liquid waste and its residue?	No
3-12	3-12	Are containers protected from the weather? If storing containers outdoors, they are placed on an impervious surface and protected from the elements.	No
3-13	3-13	Are containers protected from fire and secure from vandalism and physical damage such as that caused by fork lifts or other equipment?	No

Exhibit 1. Check List Items

Round 1 Question Number	Round 2 Question Number	Question Text	Included in EBPI Score
3-14	3-14	Are the containers compatible with the type of waste being stored in them and are containers that have wastes that could react with each other separated by a physical barrier, like a dike, berm, or wall, or by a safe distance?	No
3-15	3-15	Is there adequate aisle space for unobstructed movement of emergency equipment and personnel?	No
3-16	3-16	If contents have a flashpoint below 200° F, are they isolated according to local fire department recommendations?	No
3-17	3-17	If a leak or spill occurs does facility immediately stop and contain the leak and repair or replace the container?	No
3-18	3-18	Have employees been trained on how to properly manage waste?	No
3-19	3-19	Does hazardous waste storage area have secondary containment such as a curb, ramped pad, dike, or containment room?	No
3-20	3-20	Are you doing any of the best management practices listed in Table 3.1 of the Self Audit Workbook?	No
3-21	3-21	Are hazardous wastes that are a liquid shipped to a licensed recycling, treatment, storage, or disposal facility?	No
3-22	3-22	Is facility complying with the following? -Liquid haz waste not disposed of in dumpster, landfill, incinerator -Waste not put into municipal sanitary sewer without WWTP authorization -Haz waste not into septic tank, storm drain, into stream or ground	Yes
3-23	3-23	Is facility doing any of the following best management practices?	No
3-24	3-24	Does facility recycle fluorescent tubes, incandescent lamps, and/or dry cell batteries?	No
3-25	3-25	Are fluorescent tubes, incandescent lamps, dry cell batteries, stored for recycling according to the following requirements?	No
3-26	3-26	Have employees who handle fluorescent tubes, incandescent lamps, and dry cell batteries, been informed about proper handling of these waste materials and any emergency procedures?	No
3-27	3-27	Does facility...? Recharge and use rechargeable batteries; Use low-mercury, energy-efficient fluorescent/HID light bulbs; Keep recycling or disposal receipts for 3 yrs and know who recycles or disposes of them	No
3-28	3-28	Is all solid waste hauled to a recycling center or a licensed disposal facility, which includes: a landfill, incinerator, or a transfer/processing facility?	No

Exhibit 1. Check List Items

Round 1 Question Number	Round 2 Question Number	Question Text	Included in EBPI Score
3-29	3-29	Is waste stored in leak-proof, covered containers (e.g. covered dumpster)?	No
3-30	3-30	Does your facility recycle or reuse office paper, corrugated cardboard, wood pallets, 55-gallon clean drums, other containers, or scrap metal?	No
4-1	4-1	Does your facility store fuel, solvents, or other material in an aboveground storage tank?	No
4-2	4-2	Does the storage tank have secondary containment?	No
4-3	4-3	Is the tank any of the following? Used to supply flammable or combustible liquid w/storage capacity of >1100 gal; Flammable compressed gas or LPG container fill location; LPG tank w/water capacity >2000 gal or 2 or more tanks w/aggregate capacity >4000gal	No
4-4	4-4	Has the tank been certified by the MDEQ, Waste and Hazardous Materials Division?	No
4-5	4-5	Does the tank meet the requirements in Table 4.1 of the Self Audit Workbook?	No
5-1	4-51	Does facility have a boiler?	No
5-2	4-52	Does facility keep a record of the amount of fuel the boiler uses per month (e.g., monthly bill from utility company)?	No
5-3	4-53	Does the boiler stack discharge vertically upwards and are all devices used to prevent precipitation from entering the sack not restricting the vertical flow of the exhaust gas stream?	No
5-4	4-54	Does boiler comply with the requirements below?	No
5-5	4-55	Is Facility doing any of the following best management practices for boilers?	No
6.1	5-1	Is facility connected to a sewer system that goes to a wastewater treatment plant?	No
6.2	5-2	Does facility empty wastewater from any dry cleaning machine into a drain, toilet, or sink?	Yes
6.3	5-3	Does facility have permission from the wastewater treatment plant to dispose of wastewater from dry cleaning machine into the sewer system? (e.g., permit, letter, or written authorization from WWTP)	Yes
6.4	5-4	Does facility empty wastewater from laundry area, air compressor, boiler, vacuum, or floor cleaning into a drain, toilet, or sink?	No
6.5	5-5	Does facility have permission from the wastewater treatment plant to dispose of wastewater from laundry area, air compressor, boiler, vacuum, or floor cleaning into the sewer system? (e.g., permit, letter, or written authorization from WWTP)	No
6.6	5-6	Does facility use an evaporator device to dispose of wastewater?	No
6.7	5-7	Is any wastewater collected in a holding tank?	No
6.8	5-8	Is wastewater that is collected in holding tank disposed	No

Exhibit 1. Check List Items

Round 1 Question Number	Round 2 Question Number	Question Text	Included in EBPI Score
		of by a licensed and registered hauler?	
6.9	5-9	Does any wastewater from facility go to a septic system?	No
6.1	5-10	Does facility empty wastewater from dry cleaning machine, laundry area, air compressor, boiler, vacuum, or floor cleaning onto the ground, storm sewer, steam, or ditch?	No
6.11	5-11	Are there any floor drains in facility?	No
6.12	5-12	Do they empty to the sewer system that goes to a wastewater treatment plant or a holding tank?	No
6.13	5-13	Have floor drains that empty to a storm sewer, stream, or ditch been plugged with concrete or a locked down cement cap so that they are inaccessible and unusable?	No
7.1	6-1	Are there at least two portable fire extinguishers (or one extinguisher for perc dry cleaning facilities) with at least a 2a,10bc rating at the facility and is one of those fire extinguishers mounted near the dry cleaning machine?	No
7.2	6-2	Does facility have an approved organic vapor respirator?	No

Questions 1.32 and 1.33 were not asked in round 2. They correspond to round 1 questions 1-24 and 1-25, respectively. Questions 4.51, 4.52, 4.53, 4.54, and 4.55 were not asked in round 2. They correspond to round 1 questions 5-1, 5-2, 5-3, 5-4, and 5-5, respectively.

Exhibit 2: Contents of Dataset used in Analysis of Michigan ERP

Field	Descriptions
round	Baseline (1), follow-up (2) round of inspections, or self-certification data (3)
facility	Facility number (unique facility identifier)
name	Facility name
inspector	Name of inspector
question	Check list question
q1	Check list question number from baseline check list
response	Check list response
ebpi	Indicator that question is included in EBPI score
strata	Sampling strata
weight	Sampling weight
fpc	Finite population correction

Michigan ERP

This workbook contains summaries of the inspections and self-certification responses for the Michigan Department of Environmental Quality (DEQ) Retail Dry Cleaner Environmental Results Program (ERP). The DEQ conducted inspections of two different samples of dry cleaners that use perchlorate solvents. Baseline inspections were conducted for a sample of 262 establishments. Dry cleaners were then given the opportunity to voluntarily self-certify their environmental performance. Follow-up inspections were conducted at a second random sample of 272 establishments after self-certification. During both rounds of inspections, the DEQ collected data on a large number of environmental business practices. The inspections assess facilities against a checklist of practices, indicating which ones are being used at each facility.

The workbook contains the following sheets:

Sheet	Contents
Questions	Checklist questions
Round 1&2 Achievement Rates	Achievement rates (proportions) on environmental practices, as reported by inspectors in the baseline and follow-up inspections, and the performance change
Rd 1&2 Fac.Score&Agg.Achieve	Facility scores and aggregate achievement rates from the baseline and follow-up inspections.
Self-Cert Achievement Rates	Achievement rates (proportions) on environmental practices from self-certification
SC Facility Score&Agg. Achieve	Facility scores and aggregate achievement rates from self-certification

Michigan ERP: Check List Questions

Round 1 Question Number	Round 2 Question Number	Question Text	Included in EBPI Score	"Good" Response
1-1	1-1	Is the Machine operated according to manufacturers' specifications?	No	Yes
1-2	1-2	Are machine operating manuals kept on site?	No	Yes
1-3	1-3	Is the dry cleaning machine door kept closed, except for loading and unloading?	No	Yes
1-4	1-4	Does facility keep a log of the gallons of perc purchased each month?	Yes	Yes
1-5	1-5	Are all perc purchase logs kept on file for five years?	No	Yes
1-6	1-6	Are all cartridge filters drained 24 hours before removal?	No	Yes
1-7	1-7	Are specified components of the machine inspected weekly/bi-weekly for perceptible leaks?	Yes	Yes
	1-8	Are specified components inspected monthly for vapor leaks while in operation with a halogenated hydrocarbon detector PCE gas analyzer?	No	Yes
1-8	1-9	If a leak is detected, is it repaired in 24 hours or if it cannot be repaired in 24 hours are parts ordered within 2 working days and installed within 5 days of receiving them?	No	Yes
1-9	1-10	Does facility keep a log of the date of any necessary repairs made to the machine?	No	Yes
1-10	1-11	Does facility keep a log of machine inspections that identifies any components that are leaking?	No	Yes
1-11	1-12	Small Area Source? Dry-to-dry machine installed before 12/9/91 AND did facility purchase less than 140 gallons of perc per year during all previous 12-month periods?	No	Yes
1-12	1-13	Do all dry-to-dry machines installed before 12/9/91 have an external refrigerated condenser OR a carbon adsorber that was installed prior to 9/22/93? (Choose N/A if machine installed after 12/9/91)	No	Yes
1-13	1-14	Do all dry-to-dry machines installed after 12/9/91 have an internal refrigerated condenser? (Choose N/A if machine installed before 12/9/91)	No	Yes
1-14	1-15	Do all dry-to-dry machines initially installed after 12/21/05 have an internal carbon adsorber AND refrigerated condenser? (Choose N/A if machine installed before 12/21/05)	No	Yes
	1-16	If major source, is concentration of perc in the machine drum at the end of the cycle measured weekly with a colorimetric detector tube or PCE gas analyzer? (choose N/A if not major source)	No	Yes
	1-17	Is the concentration of perc less than 300 ppm?	No	Yes
	1-18	Are the external refrigerated condensers on a vented machine routed properly so the air-perc stream is not vented directly to atmosphere while drum is rotating?	No	Yes
1-15	1-19	Is the outlet temperature of the vapor stream passing through the cooling coil (refrigerated condenser) read weekly and is it equal to or less than 45deg F (±2 F) or 7.2deg C (±1.1degC)?	Yes	Yes
	1-20	Are the high and low pressures of the refrigeration system read and recorded on a weekly basis? (Choose N/A if no pressure gauges)	No	Yes
	1-21	Are the pressures within those specified by the manufacturer? (Choose N/A if no pressure gauges)	No	Yes
1-16	1-22	Is the date, temperature sensor or pressure gauge monitoring results recorded weekly?	No	Yes
1-17	1-23	Is the date, temperature sensor or pressure gauge monitoring results kept on file for five years?	No	Yes
	1-24	Is the machine equipped with an external carbon adsorber?	No	Yes
1-18	1-25	If an external carbon adsorber is installed on a vented machine, is none of the air-perchloroethylene gas-vapor stream allowed to bypass the carbon adsorber to the atmosphere?	No	Yes
1-19	1-26	Is the concentration of perc in the exhaust of the external carbon adsorber measured weekly using a colorimetric detector tube or PCE gas analyzer?	No	Yes
1-20	1-27	Is the concentration of perc in the exhaust of the external carbon adsorber less than 100 parts per million per volume?	No	Yes
1-21	1-28	Are the date and colorimetric detector tube monitoring results recorded weekly?	No	Yes
1-22	1-29	Are the date and colorimetric detector tube monitoring results kept on file for 5 years?	No	Yes
1-23	1-30	Are necessary repairs made to the refrigerated condenser and/or carbon adsorber?	No	Yes
	1-31	Was a Notification of Compliance Status Form submitted to the MDEQ?	No	Yes
1-24	1-32	Has the facility paid their air quality fee?	No	Yes
1-25	1-33	Has the facility paid their MDEQ Dry Cleaning License Fee?	No	Yes
2-1	2-1	Does the facility have a dry cleaning machine that uses a petroleum solvent?	No	No
2-2	2-2	Is the TOTAL manufacturers' rated dryer capacity for all dryers used for petroleum solvent equal to or greater than 84 pounds (38 kilograms)? (see explanation below) AND Was the equipment installed after December 14, 1982?	No	Yes
2-3	2-3	Is the filter a cartridge filter?	No	Yes
2-4	2-4	Are cartridge filters drained in their sealed housings for at least eight hours prior to their removal?	No	Yes
2-5	2-5	Is leak inspection and leak repair cycle information in the operating manual and on a clearly visible label posted on the dryer?	No	Yes
2-6	2-6	Was the dryer installed between December 14, 1982 and September 21, 1984	No	Yes
2-7	2-7	Does facility use more than 4,700 gallons (17,791 liters) of solvent per year?	No	No
2-8	2-8	Is the dryer a solvent recovery dryer?	No	Yes
2-9	2-9	Was an initial performance test conducted to verify that the flow rate of recovered solvent from the solvent recovery dryer at the termination of the recovery cycle is no greater than 0.05 liters per minute?	No	Yes
2-10	2-10	Does the facility have a copy of the initial performance test?	No	Yes

Michigan ERP: Check List Questions

Round 1 Question Number	Round 2 Question Number	Question Text	Included in EBPI Score	"Good" Response
3-1	3-1	Does facility generate less than 220 pounds of hazardous waste per month?	No	Yes
3-2	3-2	Does facility have a site identification number when needed for waste shipment? (Choose N/A if you do not ship waste off-site)	No	Yes
3-3	3-3	Does each shipment of hazardous waste or liquid industrial waste have a manifest or receipt from the waste hauler that identifies manifest number and the type and quantity of waste shipped?	Yes	Yes
3-4	3-4	Is the waste properly listed on the manifest form (e.g., F002) and is the quantity shipped entered on the manifest form?	No	Yes
3-5	3-5	Has a copy of each manifest been signed by the waste hauler and submitted to the MDEQ by the 10th of the month following the shipment?	No	Yes
3-6	3-6	Are all copies of the manifest that are signed by the hauler and disposal facility kept on file for at least 3 years?	No	Yes
3-7	3-7	Is each storage container labeled with the name of the contents (e.g., perc waste, filters) and is the label readable? Container may be labeled using purchased labels, a stencil, or the completed shipping label.	No	Yes
3-8	3-8	Is each container that is being shipped labeled according to the US DOT Shipping requirements? (E.g. does it have a completed US DOT shipping label?)	No	Yes
3-9	3-9	Is less than 2,200 pounds (5 drums) of hazardous waste accumulated on site?	No	Yes
3-10	3-10	Are containers in good condition and kept closed except when adding or removing waste?	Yes	Yes
3-11	3-11	Is the exterior of the storage containers kept free of the liquid waste and its residue?	No	Yes
3-12	3-12	Are containers protected from the weather? If storing containers outdoors, they are placed on an impervious surface and protected from the elements.	No	Yes
3-13	3-13	Are containers protected from fire and secure from vandalism and physical damage such as that caused by fork lifts or other equipment?	No	Yes
3-14	3-14	Are the containers compatible with the type of waste being stored in them and are containers that have wastes that could react with each other separated by a physical barrier, like a dike, berm, or wall, or by a safe distance?	No	Yes
3-15	3-15	Is there adequate aisle space for unobstructed movement of emergency equipment and personnel?	No	Yes
3-16	3-16	If contents have a flashpoint below 200° F, are they isolated according to local fire department recommendations?	No	Yes
3-17	3-17	If a leak or spill occurs does facility immediately stop and contain the leak and repair or replace the container?	No	Yes
3-18	3-18	Have employees been trained on how to properly manage waste?	No	Yes
3-19	3-19	Does hazardous waste storage area have secondary containment such as a curb, ramped pad, dike, or containment room?	No	Yes
3-20	3-20	Are you doing any of the best management practices listed in Table 3.1 of the Self Audit Workbook?	No	Yes
3-21	3-21	Are hazardous wastes that are a liquid shipped to a licensed recycling, treatment, storage, or disposal facility?	No	Yes
3-22	3-22	Is facility complying with the following? -Liquid haz waste not disposed of in dumpster, landfill, incinerator -Waste not put into municipal sanitary sewer without WWTP authorization -Haz waste not into septic tank, storm drain, into stream or ground	Yes	Yes
3-23	3-23	Is facility doing any of the following best management practices?	No	Yes
3-24	3-24	Does facility recycle fluorescent tubes, incandescent lamps, and/or dry cell batteries?	No	Yes
3-25	3-25	Are fluorescent tubes, incandescent lamps, dry cell batteries, stored for recycling according to the following requirements?	No	Yes
3-26	3-26	Have employees who handle fluorescent tubes, incandescent lamps, and dry cell batteries, been informed about proper handling of these waste materials and any emergency procedures?	No	Yes
3-27	3-27	Does facility...? Recharge and use rechargeable batteries; Use low-mercury, energy-efficient fluorescent/HID light bulbs; Keep recycling or disposal receipts for 3 yrs and know who recycles or disposes of them	No	Yes
3-28	3-28	Is all solid waste hauled to a recycling center or a licensed disposal facility, which includes: a landfill, incinerator, or a transfer/processing facility?	No	Yes
3-29	3-29	Is waste stored in leak-proof, covered containers (e.g. covered dumpster)?	No	Yes
3-30	3-30	Does your facility recycle or reuse office paper, corrugated cardboard, wood pallets, 55-gallon clean drums, other containers, or scrap metal?	No	Yes
4-1	4-1	Does your facility store fuel, solvents, or other material in an aboveground storage tank?	No	No
4-2	4-2	Does the storage tank have secondary containment?	No	Yes
4-3	4-3	Is the tank any of the following? Used to supply flammable or combustible liquid w/storage capacity of >1100 gal; Flammable compressed gas or LPG container fill location; LPG tank w/water capacity >2000 gal or 2 or more tanks w/aggregate capacity >4000gal	No	Yes
4-4	4-4	Has the tank been certified by the MDEQ, Waste and Hazardous Materials Division?	No	Yes

Michigan ERP: Check List Questions

Round 1 Question Number	Round 2 Question Number	Question Text	Included in EBPI Score	"Good" Response
4-5	4-5	Does the tank meet the requirements in Table 4.1 of the Self Audit Workbook?	No	Yes
5-1	4-51	Does facility have a boiler?	No	Yes
5-2	4-52	Does facility keep a record of the amount of fuel the boiler uses per month (e.g., monthly bill from utility company)?	No	Yes
5-3	4-53	Does the boiler stack discharge vertically upwards and are all devices used to prevent precipitation from entering the sack not restricting the vertical flow of the exhaust gas stream?	No	Yes
5-4	4-54	Does boiler comply with the requirements below?	No	Yes
5-5	4-55	Is Facility doing any of the following best management practices for boilers?	No	Yes
6.1	5-1	Is facility connected to a sewer system that goes to a wastewater treatment plant?	No	Yes
6.2	5-2	Does facility empty wastewater from any dry cleaning machine into a drain, toilet, or sink?	With 5.03	No
6.3	5-3	Does facility have permission from the wastewater treatment plant to dispose of wastewater from dry cleaning machine into the sewer system? (e.g., permit, letter, or written authorization from WWTP)	With 5.02	Yes
		Combination of questions 5-02 and 5-03 (See note at the bottom of this table for more info.)	Yes	Yes
6.4	5-4	Does facility empty wastewater from laundry area, air compressor, boiler, vacuum, or floor cleaning into a drain, toilet, or sink?	No	No
6.5	5-5	Does facility have permission from the wastewater treatment plant to dispose of wastewater from laundry area, air compressor, boiler, vacuum, or floor cleaning into the sewer system? (e.g., permit, letter, or written authorization from WWTP)	No	Yes
6.6	5-6	Does facility use an evaporator device to dispose of wastewater?	No	Yes
6.7	5-7	Is any wastewater collected in a holding tank?	No	Yes
6.8	5-8	Is wastewater that is collected in holding tank disposed of by a licensed and registered hauler?	No	Yes
6.9	5-9	Does any wastewater from facility go to a septic system?	No	No
6.1	5-10	Does facility empty wastewater from dry cleaning machine, laundry area, air compressor, boiler, vacuum, or floor cleaning onto the ground, storm sewer, steam, or ditch?	No	No
6.11	5-11	Are there any floor drains in facility?	No	No
6.12	5-12	Do they empty to the sewer system that goes to a wastewater treatment plant or a holding tank?	No	Yes
6.13	5-13	Have floor drains that empty to a storm sewer, stream, or ditch been plugged with concrete or a locked down cement cap so that they are inaccessible and unusable?	No	Yes
7.1	6-1	Are there at least two portable fire extinguishers (or one extinguisher for perc dry cleaning facilities) with at least a 2a,10bc rating at the facility and is one of those fire extinguishers mounted near the dry cleaning machine?	No	Yes
7.2	6-2	Does facility have an approved organic vapor respirator?	No	Yes

NOTE: EBPIs denoted in yellow highlighting.

Questions 1.32 and 1.33 were not asked in round 2. They correspond to round 1 questions 1-24 and 1-25, respectively. Questions 4.51, 4.52, 4.53, 4.54, and 4.55 were not asked in round 2. They correspond to round 1 questions 5-1, 5-2, 5-3, 5-4, and 5-5, respectively.

Question 5.01, 5.02, and 5.03 determine whether establishments are improperly emptying wastewater into drains that flow to wastewater treatment plants. Establishments that are connected to a sewer system (i.e., they answered "Yes" to 5.01) are considered in compliance if (1) they do not empty wastewater in a drain (they responded "No" to 5.02) or (2) for those that do empty wastewater in a drain, they have permission to do so (they answered "Yes" to 5.03). The combination of 5.02 and 5.03 is "Yes" if they answered "No" to 5.02 or if they answered "Yes" to both 5.02 and 5.03. It applies only to establishments with drains connected to sanitary sewers (i.e., that answered "Yes" to 5.01).

Michigan ERP: Response to Check List Items

Round 2 Question	Baseline							
	Sample Responses					Design-based Estimates		
	No	Yes	N/A	Blank	Valid Responses	Proportion	90 Percent Confidence Interval	
1.01	3	253		6	256	98.7	97.7	- 99.8
1.02	5	253		4	258	98.0	96.8	- 99.3
1.03	1	255		6	256	99.5	98.8	- 100.0
1.04	79	177		6	256	65.7	61.8	- 69.7
1.05	114	139		9	253	49.1	46.0	- 52.2
1.06		242		20	242	100.0	100.0	- 100.0
1.07	49	205		8	254	78.6	75.0	- 82.3
1.08								-
1.09	1	252		9	253	99.7	99.3	- 100.0
1.10	55	197		10	252	76.0	72.2	- 79.8
1.11	65	182		15	247	71.2	67.2	- 75.2
1.12	225	20		17	245	7.2	5.2	- 9.3
1.13	2	32	198	30	34	94.5	87.9	- 100.0
1.14		206	25	31	206	100.0	100.0	- 100.0
1.15	1	35	195	31	36	96.9	91.8	- 100.0
1.16								-
1.17								-
1.18								-
1.19	44	178	2	38	222	77.1	73.3	- 80.8
1.20								-
1.21								-
1.22	73	157	2	30	230	65.3	61.0	- 69.7
1.23	91	141	2	28	232	56.4	52.3	- 60.5
1.24								-
1.25	1		234	27	1	0.0		-
1.26		2	232	28	2	100.0		-
1.27		2	232	28	2	100.0		-
1.28		2	232	28	2	100.0		-
1.29		2	232	28	2	100.0		-
1.30		191		71	191	100.0	100.0	- 100.0
1.31								-
1.32	14	232		16	246	94.2	92.1	- 96.3
1.33	7	243		12	250	97.0	95.5	- 98.6
2.01	209	6		47	215	2.6	1.1	- 4.2
2.02	6	1		255	7	17.2	0.0	- 47.7
2.03		1		261	1	100.0		-
2.04		2		260	2	100.0		-
2.05		1		261	1	100.0		-
2.06	2			260	2	0.0		-
2.07				262				-
2.08	1	1		260	2	59.9		-
2.09	2			260	2	0.0		-
2.10	2			260	2	0.0		-
3.01	36	219		7	255	83.9	80.8	- 87.1
3.02	9	242		11	251	96.3	94.6	- 98.0
3.03	43	201		18	244	79.5	76.0	- 83.0
3.04	35	206		21	241	83.1	79.8	- 86.5
3.05	45	189		28	234	78.3	74.5	- 82.1
3.06	58	180		24	238	72.6	68.6	- 76.5
3.07	53	192		17	245	75.6	71.9	- 79.3
3.08	41	197		24	238	79.6	76.2	- 83.0
3.09	4	246		12	250	98.4	97.2	- 99.5
3.10	14	233		15	247	93.6	91.3	- 96.0
3.11	3	240		19	243	98.8	97.8	- 99.8

Michigan ERP: Response to Check List Items

Round 2 Question	Baseline							
	Sample Responses					Design-based Estimates		
	No	Yes	N/A	Blank	Valid Responses	Proportion	90 Percent Confidence Interval	
3.12	5	238		19	243	97.9	96.6	- 99.2
3.13	6	235		21	241	97.4	95.9	- 98.9
3.14	3	241		18	244	98.8	97.8	- 99.8
3.15	2	245		15	247	99.2	98.4	- 100.0
3.16		240		22	240	100.0	100.0	- 100.0
3.17	1	244		17	245	99.6	99.0	- 100.0
3.18	44	193		25	237	79.0	75.2	- 82.7
3.19	193	54		15	247	21.1	17.5	- 24.7
3.20	131	107		24	238	41.4	38.1	- 44.7
3.21	3	244		15	247	98.8	97.8	- 99.8
3.22	4	241		17	245	98.4	97.4	- 99.5
3.23	39	209		14	248	86.7	84.7	- 88.7
3.24	241	9		12	250	3.3	1.8	- 4.7
3.25	6	5		251	11	45.0	10.6	- 79.4
3.26	4	6		252	10	62.3	34.7	- 89.9
3.27	130	110		22	240	47.5	43.1	- 51.9
3.28	1	242		19	243	99.7	99.2	- 100.0
3.29	1	243		18	244	99.6	99.0	- 100.0
3.30	173	71		18	244	27.5	24.1	- 31.0
4.01	240	10		12	250	3.6	2.1	- 5.2
4.02	5	3		254	8	37.9	3.4	- 72.4
4.03	8			254	8	0.0	0.0	- 0.0
4.04				262				-
4.05	4	3		255	7	45.3	0.3	- 90.3
4.51	3	246		13	249	98.9	98.0	- 99.8
4.52	65	184		13	249	68.4	66.2	- 70.6
4.53	37	210		15	247	87.6	86.1	- 89.2
4.54	3	244		15	247	98.8	97.9	- 99.8
4.55	7	239		16	246	97.1	95.6	- 98.6
5.01	4	248		10	252	98.6	97.5	- 99.6
5.02	186	61		15	247	23.9	20.3	- 27.5
5.03	40	20		202	60	31.7	24.8	- 38.6
5.02 & 5.03	40	204		18	244	83.7	80.7	- 86.7
5.04	23	224		15	247	90.2	87.4	- 92.9
5.05	83	137		42	220	62.3	60.0	- 64.6
5.06	193	58		11	251	22.6	18.9	- 26.2
5.07	163	86		13	249	35.1	33.4	- 36.8
5.08	31	51		180	82	62.6	55.1	- 70.1
5.09	235	11		16	246	4.1	2.4	- 5.8
5.10	230	17		15	247	6.5	4.4	- 8.7
5.11	60	187		15	247	75.2	71.3	- 79.1
5.12	10	177		75	187	95.2	93.1	- 97.4
5.13	3	7		252	10	72.5	48.2	- 96.9
6.01	17	231		14	248	92.7	90.2	- 95.1
6.02	16	232		14	248	93.0	90.6	- 95.4

Notes:

EBPIs denoted in yellow highlighting.

Questions 1.32 and 1.33 were not asked in the follow-up round. They correspond to baseline questions 1-24 and 1-25, respectively. Questions 4.51, 4.52, 4.53, 4.54, and 4.55 were not asked in the follow-up. They correspond to baseline questions 5-1, 5-2, 5-3, 5-4, and 5-5, respectively.

Michigan ERP: Response to Check List Items

Round 2 Question	Follow-up						
	Sample Responses					Design-based Estimates	
	No	Yes	N/A	Blank	Valid Responses	Proportion	90 Percent Confidence Interval
1.01	1	270		1	271	99.6	99.1 - 100.0
1.02	4	267		1	271	98.4	97.3 - 99.5
1.03	1	268		3	269	99.6	99.1 - 100.0
1.04	100	169		3	269	62.7	59.3 - 66.1
1.05	110	159		3	269	59.3	55.9 - 62.7
1.06		263		9	263	100.0	100.0 - 100.0
1.07	64	205		3	269	75.8	72.5 - 79.0
1.08	233	33		6	266	11.4	8.9 - 13.9
1.09	4	264		4	268	98.1	96.8 - 99.4
1.10	53	214		5	267	79.5	76.4 - 82.7
1.11	63	204		5	267	75.7	72.3 - 79.0
1.12	242	21		9	263	8.2	5.9 - 10.5
1.13	9	17	230	16	26	64.5	55.7 - 73.3
1.14		227	31	14	227	100.0	100.0 - 100.0
1.15	3	18	237	14	21	87.7	75.7 - 99.6
1.16	3		250	19	3	0.0	-
1.17	4			268	4	0.0	0.0 - 0.0
1.18	1	24	232	15	25	96.1	89.5 - 100.0
1.19	58	191	8	15	249	77.0	73.7 - 80.2
1.20	106	12	138	16	118	10.3	6.0 - 14.5
1.21	14	103	135	20	117	87.8	83.5 - 92.2
1.22	67	192		13	259	74.4	71.0 - 77.8
1.23	87	172		13	259	67.0	63.5 - 70.5
1.24	249	2		21	251	0.5	0.0 - 1.1
1.25		1		271	1	100.0	-
1.26		1		271	1	100.0	-
1.27		1		271	1	100.0	-
1.28		1		271	1	100.0	-
1.29		1		271	1	100.0	-
1.30	1	242		29	243	99.5	98.7 - 100.0
1.31	92	151		29	243	61.7	57.4 - 66.0
1.32							-
1.33							-
2.01	258	9		5	267	2.4	1.4 - 3.5
2.02	7	1		264	8	5.6	0.0 - 18.3
2.03				272			-
2.04				272			-
2.05				272			-
2.06				272			-
2.07				272			-
2.08		1		271	1	100.0	-
2.09		1		271	1	100.0	-
2.10				272			-
3.01	4	261		7	265	99.0	98.4 - 99.6
3.02	5	253	3	11	258	97.9	96.6 - 99.2
3.03	32	225		15	257	87.7	85.1 - 90.3
3.04	9	247		16	256	96.6	95.0 - 98.2
3.05	24	231		17	255	89.9	87.4 - 92.5
3.06	57	200		15	257	78.0	74.7 - 81.2
3.07	37	221		14	258	86.5	83.7 - 89.4
3.08	18	237		17	255	93.3	91.3 - 95.4
3.09	2	257		13	259	99.4	98.8 - 99.9
3.10	15	245		12	260	94.5	92.7 - 96.4
3.11	6	254		12	260	97.8	96.5 - 99.1

Michigan ERP: Response to Check List Items

Round 2 Question	Follow-up							
	Sample Responses					Design-based Estimates		
	No	Yes	N/A	Blank	Valid Responses	Proportion	90 Percent Confidence Interval	
3.12	10	250		12	260	96.2	94.6	- 97.8
3.13	8	252		12	260	96.8	95.3	- 98.3
3.14	2	258		12	260	99.3	98.6	- 100.0
3.15		260		12	260	100.0	100.0	- 100.0
3.16		260		12	260	100.0	100.0	- 100.0
3.17	3	258		11	261	99.0	98.3	- 99.7
3.18	6	254		12	260	97.9	96.7	- 99.1
3.19	211	48		13	259	18.5	15.2	- 21.8
3.20	114	133		25	247	53.6	51.2	- 56.0
3.21	1	258		13	259	99.6	99.1	- 100.0
3.22	7	253		12	260	97.6	96.4	- 98.8
3.23	6	252		14	258	97.7	96.5	- 99.0
3.24	219	41		12	260	15.6	12.7	- 18.4
3.25	23	22		227	45	48.4	36.9	- 59.8
3.26	3	41		228	44	93.1	86.7	- 99.6
3.27	142	108		22	250	44.1	40.2	- 48.0
3.28		263		9	263	100.0	100.0	- 100.0
3.29		261		11	261	100.0	100.0	- 100.0
3.30	123	134		15	257	52.3	50.3	- 54.3
4.01	265	3		4	268	1.0	0.1	- 1.8
4.02	1	3		268	4	64.7		-
4.03	3	1		268	4	9.1		-
4.04				272				-
4.05		4		268	4	100.0		-
4.51								-
4.52								-
4.53								-
4.54								-
4.55								-
5.01	1	267		4	268	99.6	99.1	- 100.0
5.02	227	39		6	266	14.0	11.1	- 16.8
5.03	39	8		225	47	14.7	6.8	- 22.5
5.02 & 5.03	32	231		9	263	88.0	85.3	- 90.7
5.04	1	265		6	266	99.6	99.1	- 100.0
5.05	104	163		5	267	61.0	60.2	- 61.9
5.06	216	52		4	268	19.6	16.3	- 22.9
5.07	265			7	265	0.0	0.0	- 0.0
5.08	12	3		257	15	21.4	13.5	- 29.3
5.09	260	4		8	264	1.5	0.5	- 2.5
5.10	259	6		7	265	2.2	1.0	- 3.5
5.11	21	246		5	267	91.6	89.3	- 93.9
5.12	3	247		22	250	98.8	97.9	- 99.7
5.13	5	7		260	12	60.6	34.8	- 86.3
6.01	10	257		5	267	96.2	94.8	- 97.7
6.02	9	257		6	266	96.6	95.0	- 98.1

The estimated proportion and 90% confidence interval are "design-based." I.e., they incorporate the sample weights, strata, and a finite population correction.

Michigan ERP: Response to Check List Items

Round 2 Question	Follow-up Minus Baseline				Include Variable in EBPI Score	
	Design-based Estimates					
	Proportion	90 Percent Confidence Interval		Change between Rounds		
1.01	0.9	-0.3	-	2.0	No Significant Change	No
1.02	0.4	-1.3	-	2.0	No Significant Change	No
1.03	0.1	-0.8	-	1.0	No Significant Change	No
1.04	-3.0	-8.2	-	2.1	No Significant Change	Yes
1.05	10.2	5.6	-	14.8	Significant Increase	No
1.06	0.0	0.0	-	0.0	No Significant Change	No
1.07	-2.8	-7.7	-	2.0	No Significant Change	Yes
1.08			-		N/A	No
1.09	-1.6	-2.9	-	-0.2	Significant Decrease	No
1.10	3.6	-1.4	-	8.5	No Significant Change	No
1.11	4.5	-0.7	-	9.7	No Significant Change	No
1.12	1.0	-2.2	-	4.1	No Significant Change	No
1.13	-30.0	-40.8	-	-19.2	Significant Decrease	No
1.14	0.0	0.0	-	0.0	No Significant Change	No
1.15	-9.2	-22.0	-	3.6	No Significant Change	No
1.16			-		N/A	No
1.17			-		N/A	No
1.18			-		N/A	No
1.19	-0.1	-5.0	-	4.9	No Significant Change	Yes
1.20			-		N/A	No
1.21			-		N/A	No
1.22	9.1	3.6	-	14.6	Significant Increase	No
1.23	10.6	5.2	-	15.9	Significant Increase	No
1.24			-		N/A	No
1.25	100.0		-		N/A	No
1.26	0.0	0.0	-	0.0	No Significant Change	No
1.27	0.0	0.0	-	0.0	No Significant Change	No
1.28	0.0	0.0	-	0.0	No Significant Change	No
1.29	0.0	0.0	-	0.0	No Significant Change	No
1.30	-0.5	-1.3	-	0.2	No Significant Change	No
1.31			-		N/A	No
1.32			-		N/A	No
1.33			-		N/A	No
2.01	-0.2	-2.1	-	1.6	No Significant Change	No
2.02	-11.5	-42.3	-	19.2	No Significant Change	No
2.03			-		N/A	No
2.04			-		N/A	No
2.05			-		N/A	No
2.06			-		N/A	No
2.07			-		N/A	No
2.08	40.1		-		N/A	No
2.09	100.0		-		N/A	No
2.10			-		N/A	No
3.01	15.1	11.9	-	18.3	Significant Increase	No
3.02	1.6	-0.6	-	3.7	No Significant Change	No
3.03	8.2	3.8	-	12.6	Significant Increase	Yes
3.04	13.5	9.8	-	17.2	Significant Increase	No
3.05	11.6	7.0	-	16.2	Significant Increase	No
3.06	5.4	0.3	-	10.5	Significant Increase	No
3.07	10.9	6.3	-	15.6	Significant Increase	No
3.08	13.7	9.7	-	17.7	Significant Increase	No
3.09	1.0	-0.3	-	2.3	No Significant Change	No
3.10	0.9	-2.1	-	3.9	No Significant Change	Yes
3.11	-1.0	-2.6	-	0.7	No Significant Change	No

Michigan ERP: Response to Check List Items

Round 2 Question	Follow-up Minus Baseline				Include Variable in EBPI Score
	Design-based Estimates				
	Proportion	90 Percent Confidence Interval		Change between Rounds	
3.12	-1.7	-3.8	- 0.4	No Significant Change	No
3.13	-0.6	-2.7	- 1.5	No Significant Change	No
3.14	0.5	-0.7	- 1.7	No Significant Change	No
3.15	0.8	0.0	- 1.6	Significant Increase	No
3.16	0.0	0.0	- 0.0	No Significant Change	No
3.17	-0.6	-1.5	- 0.3	No Significant Change	No
3.18	18.9	14.9	- 22.9	Significant Increase	No
3.19	-2.6	-7.5	- 2.3	No Significant Change	No
3.20	12.2	8.1	- 16.3	Significant Increase	No
3.21	0.8	-0.3	- 1.9	No Significant Change	No
3.22	-0.9	-2.4	- 0.7	No Significant Change	Yes
3.23	11.0	8.7	- 13.4	Significant Increase	No
3.24	12.3	9.1	- 15.5	Significant Increase	No
3.25	3.4	-32.1	- 38.9	No Significant Change	No
3.26	30.9	2.9	- 58.8	Significant Increase	No
3.27	-3.4	-9.3	- 2.5	No Significant Change	No
3.28	0.3	-0.1	- 0.8	No Significant Change	No
3.29	0.4	-0.2	- 1.0	No Significant Change	No
3.30	24.8	20.8	- 28.8	Significant Increase	No
4.01	-2.7	-4.5	- -0.9	Significant Decrease	No
4.02	26.8			N/A	No
4.03	9.1			N/A	No
4.04				N/A	No
4.05	54.7			N/A	No
4.51				N/A	No
4.52				N/A	No
4.53				N/A	No
4.54				N/A	No
4.55				N/A	No
5.01	1.1	0.0	- 2.2	No Significant Change	No
5.02	-9.9	-14.5	- -5.3	Significant Decrease	With 5.03
5.03	-17.0	-27.3	- -6.7	Significant Decrease	With 5.02
5.02 & 5.03	4.3	0.3	- 8.3	Significant Increase	Yes
5.04	9.5	6.7	- 12.3	Significant Increase	No
5.05	-1.3	-3.7	- 1.2	No Significant Change	No
5.06	-2.9	-7.9	- 2.0	No Significant Change	No
5.07	-35.1	-36.8	- -33.4	Significant Decrease	No
5.08	-41.2	-51.8	- -30.6	Significant Decrease	No
5.09	-2.6	-4.5	- -0.6	Significant Decrease	No
5.10	-4.3	-6.8	- -1.8	Significant Decrease	No
5.11	16.4	11.9	- 21.0	Significant Increase	No
5.12	3.6	1.3	- 5.9	Significant Increase	No
5.13	-12.0	-45.2	- 21.3	No Significant Change	No
6.01	3.6	0.7	- 6.4	Significant Increase	No
6.02	3.5	0.7	- 6.4	Significant Increase	No

Question 5.01, 5.02, and 5.03 determine whether establishments are improperly emptying wastewater into drains that flow to wastewater treatment plants. Establishments that are connected to a sewer system (i.e., they answered "Yes" to 5.01) are considered in compliance if (1) they do not empty wastewater in a drain (they responded "No" to 5.02) or (2) for those that do empty wastewater in a drain, they have permission to do so (they answered "Yes" to 5.03). The combination of 5.02 and 5.03 is "Yes" if they answered "No" to 5.02 or if they answered "Yes" to both 5.02 and 5.03. It applies only to establishments with drains connected to sanitary sewers (i.e., that answered "Yes" to 5.01).

Michigan ERP: Facility Scores and Aggregate Achievement Rates

Round	Valid Observations	Facility Score for All EBPIs											Aggregate Achievement Rate for All EPBIs					
		Percentile									Mean Score	90% Confidence Interval		Rate	90% Confidence Interval			
		10th	20th	30th	40th	50th	60th	70th	80th	90th								
Baseline	261	50.0	66.7	71.4	85.7	85.7	100.0	100.0	100.0	100.0	82.6	81.0	-	84.3	82.4	80.7	-	84.0
Follow-up	271	42.9	57.1	71.4	85.7	100.0	100.0	100.0	100.0	100.0	82.8	81.2	-	84.4	83.3	81.7	-	84.8
Follow-up Minus Baseline		-7.1	-9.5	0.0	0.0	14.3	0.0	0.0	0.0	0.0	0.2	-2.1	-	2.5	0.9	-1.4	-	3.2

Only questions with valid responses in both rounds are included in the scores .

The scores, 90 percent confidence intervals, and aggregate achievement rates reflect the design of the sample. In other words, they incorporate the sample weights, strata, and a finite population correction.

Michigan ERP: Response to Check List Items

Round 2 Question	Self-Certification							Include in Variable in EBPI Score
	No	Yes	N/A	Blank	Other	Valid Responses	Proportion	
1.01	3	471		16	5	474	99.4	No
1.02	5	467			23	472	98.9	No
1.03	1	472		22		473	99.8	No
1.04	6	467		22		473	98.7	Yes
1.05	30	439		26		469	93.6	No
1.06	6	449	4	36		455	98.7	No
1.07	8	461		26		469	98.3	Yes
1.08	263	193		39		456	42.3	No
1.09	1	469		25		470	99.8	No
1.10	20	448		27		468	95.7	No
1.11	28	435		32		463	94.0	No
1.12	288	160	1	46		448	35.7	No
1.13	8	41	309	137		49	83.7	No
1.14	2	299	63	131		301	99.3	No
1.15	8	45	308	134		53	84.9	No
1.16	21	3	335	136		24	12.5	No
1.17	5	114	2	374		119	95.8	No
1.18	2	195	157	141		197	99.0	No
1.19	4	308	48	135		312	98.7	Yes
1.20	24	234	103	134		258	90.7	No
1.21	5	244	106	140		249	98.0	No
1.22	11	351	1	132		362	97.0	No
1.23	41	315	1	138		356	88.5	No
1.24	226	122	1	146		348	35.1	No
1.25	12	117	11	355		129	90.7	No
1.26	42	83		370		125	66.4	No
1.27	11	106	1	377		117	90.6	No
1.28	32	88	1	374		120	73.3	No
1.29	38	80	1	376		118	67.8	No
1.30	9	322	1	163		331	97.3	No
1.31	165	214	1	113	2	379	56.5	No
2.01	321	39		135		360	10.8	No
2.02	60	12	1	422		72	16.7	No
2.03	9	32	1	453		41	78.0	No
2.04	4	32	1	458		36	88.9	No
2.05	2	36	1	456		38	94.7	No
2.06	33	5		457		38	13.2	No
2.07	27	3		465		30	10.0	No
2.08	6	25		464		31	80.6	No
2.09	6	20	1	468		26	76.9	No
2.10	8	20	1	466		28	71.4	No
3.01	21	449		25		470	95.5	No
3.02	9	392	27	67		401	97.8	No
3.03	8	417		70		425	98.1	Yes
3.04	3	418		74		421	99.3	No
3.05	22	397		76		419	94.7	No
3.06	18	402		75		420	95.7	No
3.07	34	411	1	49		445	92.4	No
3.08	8	428	1	58		436	98.2	No
3.09	20	426		49		446	95.5	No
3.10		448	1	46		448	100.0	Yes
3.11		446	1	48		446	100.0	No

Michigan ERP: Response to Check List Items

Round 2 Question	Self-Certification							Include in Variable in EBPI Score
	No	Yes	N/A	Blank	Other	Valid Responses	Proportion	
3.12	2	444	2	47		446	99.6	No
3.13	1	446	2	46		447	99.8	No
3.14	4	440	2	49		444	99.1	No
3.15	9	442		44		451	98.0	No
3.16	4	434	1	56		438	99.1	No
3.17		450		45		450	100.0	No
3.18	37	410		48		447	91.7	No
3.19	177	266		52		443	60.0	No
3.20	68	361		3	63	429	84.1	No
3.21	2	448		45		450	99.6	No
3.22	3	450		42		453	99.3	Yes
3.23	29	420		46		449	93.5	No
3.24	289	148		56	2	437	33.9	No
3.25	42	159		294		201	79.1	No
3.26	22	188		285		210	89.5	No
3.27	246	188		61		434	43.3	No
3.28	3	440		52		443	99.3	No
3.29	6	439		50		445	98.7	No
3.30	264	175		56		439	39.9	No
4.01	421	42		32		463	9.1	No
4.02	21	48		426		69	69.6	No
4.03	58	9		428		67	13.4	No
4.04	7	38		450		45	84.4	No
4.05	8	49	1	437		57	86.0	No
5.01	97	361		37		458	78.8	No
5.02	357	29		109		386	7.5	With 5.03
5.03	61	37		397		98	37.8	With 5.02
5.02 & 5.03	9	373		113		382	97.6	Yes
5.04	177	205		113		382	53.7	No
5.05	104	150		241		254	59.1	No
5.06	327	147		21		474	31.0	No
5.07	333	133		29		466	28.5	No
5.08	31	146		318		177	82.5	No
5.09	441	29		25		470	6.2	No
5.10	424	49		22		473	10.4	No
5.11	177	292		25	1	469	62.3	No
5.12	90	216		189		306	70.6	No
5.13	28	98	1	368		126	77.8	No
6.01	1	482		12		483	99.8	No
6.02	13	465		17		478	97.3	No

Notes:

EBPIs denoted in yellow highlighting.

Question 5.01, 5.02, and 5.03 determine whether establishments are improperly emptying wastewater into drains that flow to wastewater treatment plants. Establishments that are connected to a sewer system (i.e., they answered "Yes" to 5.01) are considered in compliance if (1) they do not empty wastewater in a drain (they responded "No" to 5.02) or (2) for those that do empty wastewater in a drain, they have permission to do so (they answered "Yes" to 5.03). The combination of 5.02 and 5.03 is "Yes" if they answered "No" to 5.02 or if they answered "Yes" to both 5.02 and 5.03. It applies only to establishments with drains connected to sanitary sewers (i.e., that answered "Yes" to 5.01).

Michigan ERP: Facility Score and Aggregate Achievement Rates

Round	Valid Obser- vations	Facility Score for All EBPIs										Aggregate Achievement Rate for All EPBIs
		Percentile									Mean Score	Rate
		10th	20th	30th	40th	50th	60th	70th	80th	90th		
Self-certification	488	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	98.7	98.7