Appendix C

Facility Characterization, Self-Certification Comparison, and Survey Data

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Facility Characterization Data

Table C-1 summarizes characteristics of the printing facilities in our two random samples, the baseline evaluations and post-certification inspections, and those in the group that voluntarily participated in Wisconsin's ERP by submitting self-certification questionnaires.

In all of these samples, the observed majority of facilities consisted of small lithographic printers that print on sheet fed and non-heatset presses. Most have very low air emissions (i.e., very small emitters of VOCs) and generate minimal hazardous waste (i.e., Very Small Quantity Generators). More than half the printers also generate industrial wastewater, though by varying methods; similar percentages develop film (i.e., generate silver-bearing wastewater) and use liquid computer-to-plate technologies.

We used EPA's Results Analyzer spreadsheet tool (US EPA 2006) to compare the baseline to the post-certification sample. In only one instance did the two samples differ significantly: the proportion of facilities using oxidizers to control their air emissions. In this category, the baseline sample contained significantly more facilities using oxidizers than did the post-certification sample (refer to Table C-1 for more information).

We collected data on staffing during the post-certification inspections and, in that sample, the majority of printers had ten or fewer employees, including 7.5% of the shops that were operated by the owner alone. We detected very few differences between the baseline and post-certification samples in other facility characteristics (only the one mentioned above), so this breakdown may be generally similar for the baseline sample also.

We summarized the characteristics of the facilities participating in the ERP self-certification process and qualitatively compared this group with the inspection samples. (The self-certifying facilities voluntarily elected to participate in the ERP and therefore do not constitute a random sample.) Like the inspection samples, the self-certification group consisted mostly of facilities that generate minimal hazardous waste. It contained a somewhat larger proportion of facilities that generate silver-bearing wastewater, but a slightly smaller proportion of facilities generating wastewater in general. The self-certification group also was comprised mostly of facilities with low air emissions; however, it contained more facilities with higher emissions than the random samples did. Among the self-certifying facilities, 27.91% were small and medium emitters of VOCs, compared with 10.53% of facilities in the inspection samples.

Table C-1. Composition of printing facilities in randomly selected baseline and post-certification samples, along with voluntary participants in Wisconsin's ERP self-certification process. Entries represent percentages of the total number of facilities in the sample.

Facility/operation characteristics	Inspection samples			Self-certification group
	Baseline	Post-certification	Overall average (B+PC)	
Estimated population size	2910	2079		
Number of facilities in sample	54	80		86
Number of employees at facility				
0 (owner operated)	*	7.50%		*
1-10	*	53.75%		*
11-25	*	11.25%		*
>25	*	27.50%		*
Printing press types				
Offset presses	62.96%	72.50%	68.66%	*
➢ sheet fed	46.30%	56.25%	52.24%	*
➢ non-heatset	55.56%	58.75%	57.46%	*
➢ heatset	11.11%	5.00%	7.46%	*
Flexographic presses	9.26%	10.00%	9.70%	*
Screen presses	18.52%	16.25%	17.16%	*
Other presses (digital, pad, ink jet, etc.)	11.11%	3.75%	6.72%	*
Control air emissions with oxidizer †	*16.98%*	*5.48%*	9.70%	*
Air emissions VOC size category				
Very small (<3 tons/yr)	88.89%	89.87%	89.47%	72.09%
Small (3 - <10 tons/yr)	7.41%	6.33%	6.77%	23.26%
Medium (10 - <25 tons/yr)	3.70%	3.80%	3.76%	4.65%
Hazardous waste generator size				
VSQG	86.96%	93.15%	90.76%	94.00%
SQG	10.87%	4.11%	6.72%	6.00%
LQG	2.17%	2.74%	2.52%	0.00%
Wastewater/stormwater				
Generate industrial wastewater	56.60%	69.33%	64.06%	52.94%
On septic system	7.41%	9.72%	8.73%	5.66%
Have silver-bearing wastewater	28.30%	32.89%	31.01%	39.29%
Generate computer-to-plate waste	28.30%	41.89%	36.22%	36.47%
Stormwater contamination	22.22%	14.10%	17.42%	*

* No data available.

† The baseline sample contained more facilities that use oxidizers to control emissions than the post-certification sample. This difference was significant at the 0.95% confidence level (PC-B = -11.5% ± 11.4%). This was the only characteristic for which the two random samples differed from one another.

Direct Comparison of Facility Self-Certifications and Post-Certification Inspection Visits

We did find some areas of overlap across the baseline, self-certification, and post-certification phases of the project, as shown here:

Baseline vs Self-certification:
- 11 that had baseline visits submitted self-certs

Self-certification vs Post-certification:
- 6 that submitted self-certs received post-cert visits
- 1 self-cert was on post-cert list but was not visited because shop was moving locations and unlikely to be operating normally during inspection time period

Baseline vs Post-certification:
- 6 printers that had baseline visits/contacts were contacted in post-cert, with the following outcomes:
  - 1 with confirmed baseline visit had post-cert visit
  - 1 that did not respond to baseline visit request had post-cert visit
  - 1 that did not respond to baseline visit request finally responded and was dropped at post-cert because no printing done on site
  - 3 with data lost from baseline visits were dropped in post-cert because contacts could not be made this time (unsure how many in lost data were visited in baseline, because in a call from one printer in baseline sample listed they indicated no baseline visit was conducted)

Baseline, Self-certification, and Post-certification:
- 3 received both baseline and post-cert visits and also submitted self-cert

We compared self-certifications with post-certification inspections for the nine facilities that overlapped in those phases of the project. These nine facilities had the following characteristics:

- Size: 0-5 employees = 5 printers; 10-50 employees = 3 printers; 50+ employees = 1 printer.
- VOC size: 0-3 tons per year = 8 printers self-certified as "very small," but 9 were according to inspectors; 10-25 tons per year = 1 printer self-certified as "medium" VOC size.
- Press types: 6 offset (5 non-heatset, 5 sheet fed, 1 heatset), 2 flexographic, and 1 screen.
- Generator size: 5 printers indicated Very Small Quantity Generator, and 4 skipped; inspectors said all 9 were Very Small Quantity Generators.

The following points summarize the results from those 9 printers:

Air Quality
- Printer compliance with VOC requirements:
  - 2 printers skipped the question, but inspectors found 1 of them complied with all VOC requirements and the other was in compliance with 50% of the requirements
  - for 7 printers, the inspectors agreed with answers 100%
- Printer compliance with state hazardous air pollutant requirements:
  - in 8 of 9 cases where inspector checked, they agreed 100%
- Use of best management practices:
  - 1 printer skipped, and inspector found none used
  - 1 printer said use BMPs, but inspector didn't find any
  - 2 printers said did not use BMPs, but inspectors found both used at least 1 BMP
  - 5 of 9, or 55%, agreed

Hazardous Waste
- Printer generates hazardous waste:
  - for 3 out of 4 printer who said did not generate waste, inspector found did generate some
  - remaining 55% agreed on generator status

- Printer handles HW properly:
  - 3 of 4 who said did not generate HW were handling waste properly according to inspector
  - other 55% agreed
- Best management practices:
  - 4 printers skipped, and 2 said not using BMPs, but inspectors found all had recycling programs and 2 were using recycled solvents

Storm water

- No exposure certification (i.e., exemption claim) submitted:
  - 2 agreed, or 22%
  - 3 could not be compared, either printer or inspector skipped response

Wastewater

- Generate wastewater:
  - 4 printers said they generate industrial wastewater, but inspectors found 8 did, so so 50% agreement
  - 1 printer said no industrial wastewater, but inspector skipped question, so no confirmation of answer available
- Send industrial wastewater to POTW:
  - 3 printers who said they generate industrial wastewater said yes
  - Inspectors found 7 send to POTW, so 43% of responses agreed
- Presence of silver bearing waste water:
  - 7 of 9 agreed, and one printer skipped the question
- Warning signs/BMPs:
  - 6 agreed, or 67%
- Responses skipped by either printer or inspector lead to very confused understanding of where sources stand with industrial wastewater discharge

Spills/Emergency Response

- Spill BMPs
  - 5 agreed, or 55%
  - 4 printers said yes, but inspectors found did not have secondary containment for oil or chemical containers
- Prepared emergency response plan:
  - only 4 were checked by the inspectors
  - 2 printers indicated they had a plan, but inspectors said no
  - 1 printer said no, but had prepared a plan by the time of inspection

Follow Up Surveys

Workshop evaluations, a post-certification survey, and notes from actual compliance assistance calls all helped to capture the participating printers' perceptions of the program and their understanding of the requirements that apply to their facilities.

Workshop Follow up

Participants attending the workshops held at technical colleges were asked to complete an evaluation. We received 14 responses out of 20 total attendees; however, given that multiple staff attended from a few companies, each company likely provided at least one response. Four questions measured outcomes from the training program:

Question	Yes	No	Neutral	% Yes	% No
1. Do you have a better understanding of your environmental requirements?	11	3	0	78.6	21.4
2. Will the ERP workbook and checklist be a useful tool for you?	14	0	0	100	0
3. Do you think you will submit the self-certification form?	7	4	3	50	28.5
4. Are the benefits to the ERP enough to motivate your participation?	9	3	2	64.3	21.4
If answered No or Neutral to #4, what other suggestions would you have for incentives to participate: ➢ it's helpful, but there's a big learning curve ➢ two recommended some evaluation provided for customers					

Based on the workshop alone, 78% responded that they had a better understanding of the requirements, and every one agreed the workbook would be a useful tool.

Post-Certification Survey

Printers who submitted complete self-certifications were surveyed to capture their views on the ERP and related materials. Out of 86 self-certifications, 10 companies responded to the survey (return rate of 11%). For example, the following points summarize responses to six of 18 questions that capture their learning and behavioral changes.

1. 5 of 9 used the online version of the workbook (printers don't want a printed copy?)
2. 5 of 9 agreed that the workbook was "definitely" or "a majority was" written in plain language and easy to understand; only 1 felt none of it was easy to read or understand
3. 8 of 10 split preferences for training in person (4) or on the web (4), and 2 of 10 felt the workbook was sufficient
4. 2 of 10 were planning to implement additional pollution prevention measures from chapter 8 of the workbook, and 5 were unsure; only 3 said they did not plan pollution prevention
5. 9 of 10 responded that they had a better understanding of their requirements; 1 skipped the question
6. 1 had found cost savings, and 4 were unsure if they would find cost savings, from using the ERP

Compliance Assistance Caller Comments
A few callers who were working through the self-certification process provided comments on their views of the project, summarized from notes kept by the project lead on all calls:

- really great program, good reminder
- good lesson, has been helpful to work through
- good process to go through; since so small, concerned about answering questions that don't apply
- very eye opening to go through; concerned about certification statement when not really sure about some questions; would have liked someone to walk through it with them
- lots of time to complete
- disappointed never got a visit; spent 8-10 hours to prepare
- Why print the workbook in color when trying to get printers to reduce emissions?