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Policy Research Seminar Final Report:  
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**Table of Contents**

<b><u>Executive Summary</u></b> .....	<b><u>5</u></b>
<b><u>Project Methodology</u></b> .....	<b><u>7</u></b>
<b><u>Analysis of Results</u></b> .....	<b><u>16</u></b>
<b><u>A. Summary Results</u></b> .....	<b><u>16</u></b>
<b><u>B. Analysis of Trends Within Results</u></b> .....	<b><u>20</u></b>
<b><u>Recommendations and Conclusions</u></b> .....	<b><u>30</u></b>
<b><u>Appendix A: Survey Results</u></b> .....	<b><u>32</u></b>
<b><u>Appendix B: Respondent Comments</u></b> .....	<b><u>40</u></b>
<b><u>Appendix C: Complete Regression Analysis of Trends Within Results</u></b> .....	<b><u>59</u></b>
<b><u>Appendix D: Survey Questions</u></b> .....	<b><u>80</u></b>

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## **I. Executive Summary**

On behalf of the New Hampshire Department of Environmental Services (NHDES), our team of researchers at the College of William & Mary was tasked with developing and implementing an evaluation of the Department's Hazardous Waste Coordinator Certification (HWCC) program. The goal of the project is to assess the overall quality of the HWCC program, defined in terms of achieving regulatory compliance, encouraging adoption of best hazardous waste management practices by regulated entities, controlling costs of compliance and enforcement, and fostering productive relationships both within the industry and between industry and regulators.

The principal method we adopted to complete this evaluation was a survey to solicit feedback from hazardous waste management professionals, industry consultants, and hazardous waste transporters who have completed the New Hampshire certification. Analysis indicates strong enthusiasm for the program and heightened confidence after training among survey respondents. We have received a large enough number of responses to all the questions in our survey to be reasonably confident that the results are unbiased. Understanding the effect of the training on actual compliance outcomes and industry cost structures is more complicated and requires establishing useful comparison cases and the collection of more reliable cost data. We include in our recommendations some methods that can be used to extend our analysis in these areas.

The results of our survey indicate that the NHDES HWCC program has been effective in several key measures, notably: a) the program has resulted in increased confidence from regulatees that they will pass inspections, b) respondents have gained practical knowledge following every training, regardless of how many times they have attended, and c) respondents feel more comfortable reaching out to regulators if they have questions about compliance with not only hazardous waste regulations, but also about other media. We also analyze the survey results for differentiation based on facility and trainee characteristics using maximum likelihood estimation techniques. In particular, we identify key actionable findings based on the facilities that are most likely to discern ways to reduce their federally designated generator size after completing the training.

The survey results provide strong evidence that the HWCC program has succeeded in its principal goals of increasing industry knowledge of regulations and establishing active working relationships between NHDES and regulated entities. Our analysis provides a useful baseline for assessing the current state of the program by providing clearly defined metrics for key program outcomes. Moreover, this study provides the first step in transforming the state of knowledge about a key question regarding the role of the regulator: what is the right balance between enforcement and compliance assistance? Our analysis indicates that in the area of hazardous waste, where regulated entities of myriad shapes and sizes face highly complex regulations, intervention in the area of compliance assistance has shown significant demonstrable benefits.

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## II. Project Methodology

### *Survey Format, Construction and Administration*

After determining that a survey of certified coordinators would be the most realistic approach for evaluating the NHDES Hazardous Waste Certification Program, the William & Mary team embarked on a comprehensive and thorough literature review on survey methodology in order to reduce the amount of potential bias in the survey results and program analysis. The survey was constructed based on best practices synthesized from this review of the academic literature on hazardous waste compliance, survey methodology, and policy program evaluation. We designed the survey with guidance from NHDES staff and Dr. Sarah Stafford, Professor of economics and Director of the Public Policy Program at the College of William & Mary, whose research has focused on areas of interest in the study including program evaluation and hazardous waste compliance.

Early in the survey construction process, we determined that a web-based survey administered via email through SurveyMonkey would be the most efficient type of survey for this project, especially given the geographic separation between the William & Mary campus and New Hampshire Hazardous Waste Coordinators. An email list of all known attendees of the certification program was provided by NHDES and used to create the mailing list that would form the sample used in the team's formal HWCC program analysis.

The survey was initially sent to 1,684 email addresses belonging to HWCC program participants on Monday, October 12th, 2015, and was available to them until Friday, October 30th, 2015. Throughout the survey administration process, the team attempted to make clear to all participants that results would be kept confidential and provided to NHDES in summary form only. This was to reassure respondents that their responses would be kept anonymous from NHDES. The team also received and responded to periodic requests for technical assistance in completing the survey form, constructive criticism, and general inquiries from survey respondents throughout the process.

As of the closing of the survey, 490 respondents had completed at least some portion of the survey, with 320 HWCC coordinators providing a RCRA ID and sample sizes of approximately 220 to 260 responses, indicating a response rate of between 13 - 15% across all survey questions.

### *Addressing Sources of Potential Selection Bias*

Following the literature review, a sizeable volume of information pertaining to the construction and administration of unbiased surveys was synthesized, with particular interest in maximizing the potential for a high response rate. Several findings from the academic literature were incorporated into the final survey design and administration. One of the most fundamental threats for potential bias in surveys is selection bias, which occurs when the survey sample does not accurately represent the population in question. Types of selection bias include undercoverage,

when some members of the true population are inadequately represented in the sample via a mechanism of exclusion (eg. only those with a telephone are surveyed in a phone survey), nonresponse bias, when individuals chosen for the sample either are unwilling or unable to fully participate in the survey, and voluntary response bias, when sample members are self-selected volunteers and cause analysis to underrepresent non-volunteers in the population.

The choice of a web-based format helped to curtail bias from undercoverage, as virtually all participants have access to an email account for purposes of maintaining their employment and, generally, because email has become an increasingly necessary and normal convention of day-to-day work. Additionally, NHDES provided us with a comprehensive email list of program participants. Assuming that most of the hazardous waste coordinators in the population would have and use email as a channel of regular communication, we felt the web-based format gave the survey the best chance at avoiding selection bias from undercoverage. While it is impossible to completely eliminate undercoverage bias, this bias is likely to be small relative to our summary findings given the strong response rate of 13 - 15% and sample size of 220-260 per question.

This estimated range for the survey response rate was calculated from an initial mailing of 1,684 valid email addresses. Assuming that those 1,684 people all received the survey email, then if 250 people answered a question, the response rate for that question is  $250/1684 = 0.14845$  or a 14.84% response rate. The lower bound is calculated using the smallest number of responses to any substantive question, which is 220. As before, this is divided by the initial mailing list number and equals a response rate of 13.06%. This estimated response rate exceeded the team's initial goal of a 12% average response rate across all survey questions. This 12% goal was deemed adequate based on the synthesis of best practices from the literature review and discussions with Dr. Stafford and is supplemented by our analysis showing the response is representative of the pool of potential respondents.<sup>1</sup> As such, the team believes comprehensive and substantive analysis can be drawn from these survey responses based on this relatively strong response rate and representative sample.

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<sup>1</sup> Most of the academic literature on response rates in web-based surveys focuses on the representativeness of the sample. See, e.g., Foster, L.T. & Surface, E.A. (2007), "Employee Surveys Administered Online: Attitudes Toward the Medium, Nonresponse, and Data Representativeness," 10 *Organizational Research Methods* 2, 241-246: "Perhaps the most serious concern is nonresponse bias, which occurs when survey requests are ignored by large numbers of employees who differ from respondents in meaningful ways. In the context of a Web-based climate survey, for example, the results will be skewed if those who complete the online questionnaire hold different views of the organization's climate than do those who withhold their responses." See also Sax, L.J. et al. (2003), "Assessing Response Rates and Nonresponse Bias in Web and Paper Surveys," 44 *Research in Higher Education* 4, 409-432, at 412: "Low response rates alone do not necessarily suggest bias. According to Krosnick (1999) and Dillman (1991), when respondent characteristics are representative of nonrespondents, low rates of return are not biasing. Yet estimating nonresponse is a challenge given that, in most cases, the identity of nonrespondents is unknown (Dey, 1997)." Because we had email addresses and RCRA ID numbers in most cases for both respondents and nonrespondents, we were able to determine characteristics of both the potential and actual pools of respondents and their facilities. Our nonresponse analysis by sector indicates that our sample is representative of the potential pool of respondents; this analysis is presented later in this section.

Addressing the potential issue of nonresponse bias would require specifically tailoring the survey questions and overall administration to maximize the desire, opportunity, and ability of hazardous waste coordinators in the population to complete the survey online. One empirically-supported suggestion on reducing this type of bias is to include both positives and negatives in the wording of survey questions.<sup>2</sup> We incorporated this suggestion by varying the positive and negative phrasing of survey questions, though this was difficult to execute perfectly. We believe that careful attention to question wording helped mitigate nonresponse bias by effectively conveying our team's interest in receiving both positive and negative feedback.

To further improve the response rate, the team instituted a set of notification and reminder emails both via NHDES personnel and a project-specific email account to the list of coordinator email addresses on record. The first notification, which came from an NHDES email account, informed the recipients that the anonymous survey would be administered in the following week and provided the William & Mary email address from which they would receive the survey, `policy-research@email.wm.edu`. The William & Mary email address had been specifically created for the project as the intended sender of the email in order to reduce the likelihood that the email containing the survey would be funneled into a spam folder and remain unseen and uncompleted by an otherwise willing participant targeted by the survey. We sent two reminder emails from the William & Mary address to start or complete the survey following the initial survey email, each one week apart, and noted a significant increase in the number of responses with each reminder. We believe careful attention to these and other nuances of administering the survey contributed to the healthy response rate and significantly attenuated nonresponse bias.

The team also wanted to ensure that nonresponse bias from incomplete responses was minimized in order to collect as equal an amount of data on every survey metric as possible. We addressed this methodological challenge by creating survey questions with exhaustive and relevant response categories. For example, for questions concerning generator cost changes, a set of responses were created that would contain many different cost ranges for the respondent to choose from and which would ideally contain a given respondent's cost range in every case. Additionally, the team incorporated another empirically-supported suggestion to use button responses over free-response entry boxes whenever possible because buttons are, on average, shown to reduce nonresponse bias. Other survey design nuances included keeping the amount of graphics within the survey module to a minimum as these tend to increase download times and, subsequently, increase the chances that a respondent will close out of the survey in frustration and not participate as they otherwise would have.

Although free-response boxes tended to reduce nonresponse bias less than button responses, the team felt that a true qualitative evaluation of the certification program would benefit from specific input that was not explicitly explored within the survey questions. This type of

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<sup>2</sup> See Couper, M.C. et al. (2001), "Web Survey Design and Administration," 65 *The Public Opinion Quarterly* 2, 230-253, for a discussion of question wording and other web survey design features shown to minimize both nonresponse and response bias. Our survey design focused on adopting these and other best practices, within the constraint of needing to acquire information about a specific population and subject matter of interest.

feedback was hypothesized to be beneficial both in its ability to create more context out of which to interpret raw survey results and as a channel through which unique perspectives and suggested improvements could be used to augment the comprehensive final analysis. Opinion boxes that were placed at the end of each survey page fulfilled this goal and are empirically deemed a best-fit for issues concerning more sensitive information.

Additionally, empirical evidence suggests that having only a single page of an online survey displayed on screen at a time as well as including a progress indicator were valuable in improving response rates and attenuating nonresponse bias, generally. Both of these suggestions were incorporated into the final survey design.

The final source of selection bias that needed to be considered was voluntary response bias. In essence, this survey was meant to be completed voluntarily and not as a requirement attached to any necessary procedure or process related to certification or continued employment. Although this admittedly opens the door to voluntary response bias affecting survey results because only those who volunteered to complete the survey were included in the sample, it was neither possible nor practical to make survey completion a requirement. However, this may have offered an advantage in the form of reduced “throw-away” or dishonest responses that would have otherwise been received by disingenuous or disinterested respondents that were forced to complete the survey against their will. The team cannot fully rule out this bias adversely affecting the results, but believe it is a very small effect, if present, because of the relatively strong response rate of 13% to 15% as discussed previously.

#### *Nonresponse Analysis by Sector*

In order to determine the likelihood of bias in our survey results due to a misrepresentative sample of the overall population of interest, we conducted a nonresponse analysis by sector. Each potential respondent was matched to his or her facility RCRA ID number using the NHDES attendee database, and facilities in turn were matched to North American Industry Classification System (NAICS) codes using their RCRA ID numbers.<sup>3</sup> Each facility was then classified according to the two-digit sector prefix of its NAICS code, resulting in classification of the pool of potential respondents into 17 different categories: automotive dealerships/service shops; construction and home improvement; education; environmental management/remediation; government; health care and social services; laundromats, dry cleaners, photography studios and other specialty personal services; manufacturing; military; mining; other (a miscellaneous category of identifiable types that did not fit in other categories); recreation; retail and wholesale trade; scientific and technical research and development; transportation and logistics; utilities; and unknown (those facilities we were unable to classify).

The results of this analysis are presented in Table 1 and Figures 1-4 and generally show that the survey responses are well-balanced by sector. In particular, the manufacturing sector is by far the largest share of both potential and actual respondents and is well-represented in the sample,

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<sup>3</sup> See North American Industry Classification System, <http://www.census.gov/eos/www/naics/>

as are most other large categories. Additional analysis conducted in determining whether to use sample selection models to analyze trends within the results confirmed that certain sectors, most notably health care, education, military and mining, were slightly overrepresented, but did not provide evidence that this oversampling would change the interpretation of the survey results.

It is important to note that Table 1 and the Figures 1-4 that follow include some duplicate entries, most notably in the “did not respond” and “only answered question 1” categories, because the survey was administered anonymously. Most respondents who answered the survey provided email addresses, but in most cases we cannot differentiate between those who did not begin the survey and those who only answered question 1. Also, in some cases, the email addresses provided on the survey were not the same as those in the NHDES database, and so some of the duplicates result from this mismatch. Most of the survey respondents who answered the substantive survey questions also provided email addresses that allowed us to match actual with potential respondents, whereas many respondents who answered only question 1 did not provide this information. These duplicate entries result in total potential respondent numbers that are larger by about 300 than the actual number of individuals to whom the survey was sent and, so provide a conservative estimate of the actual response rate by sector by increasing the denominator in the calculated response ratio.

Overall, we believe the benefits of conducting the survey anonymously substantially outweighed these drawbacks in calculating the potential sample size precisely by sector, and we were still able to match results to potential respondents for most of the sample and identify a sector for nearly all potential and actual respondents. The results of this analysis are presented below:

Table 1: Response/nonresponse breakdown by sector.

<u>naics_type</u>	<u>Did not respond to survey or only answered question 1</u>	<u>Answered question 1</u>	<u>Answered question on face-to-face training</u>	<u>Answered question on costs</u>	<u>Total</u>
auto	14	1	0	0	15
construction	39	4	3	2	43
education	39	15	12	11	54
environmental	69	9	8	8	78
government	53	5	4	4	58
health_social	96	26	15	13	122
laundry_photo	33	3	3	3	36
manufacturing	857	363	153	133	1,220
military	3	5	5	4	8
mining	1	1	1	1	2
other	2	1	0	0	3
recreation	8	2	2	2	10
retail_wholesale	183	20	18	15	203
scientific_technical	63	13	10	8	76
transport_logistics	30	5	3	3	35
unknown	19	3	2	2	22
utilities	92	14	13	12	106
<b><u>Total</u></b>	<b><u>1,601</u></b>	<b><u>490</u></b>	<b><u>252</u></b>	<b><u>221</u></b>	<b><u>2,091</u></b>

Figure 1: Response/nonresponse breakdown by sector

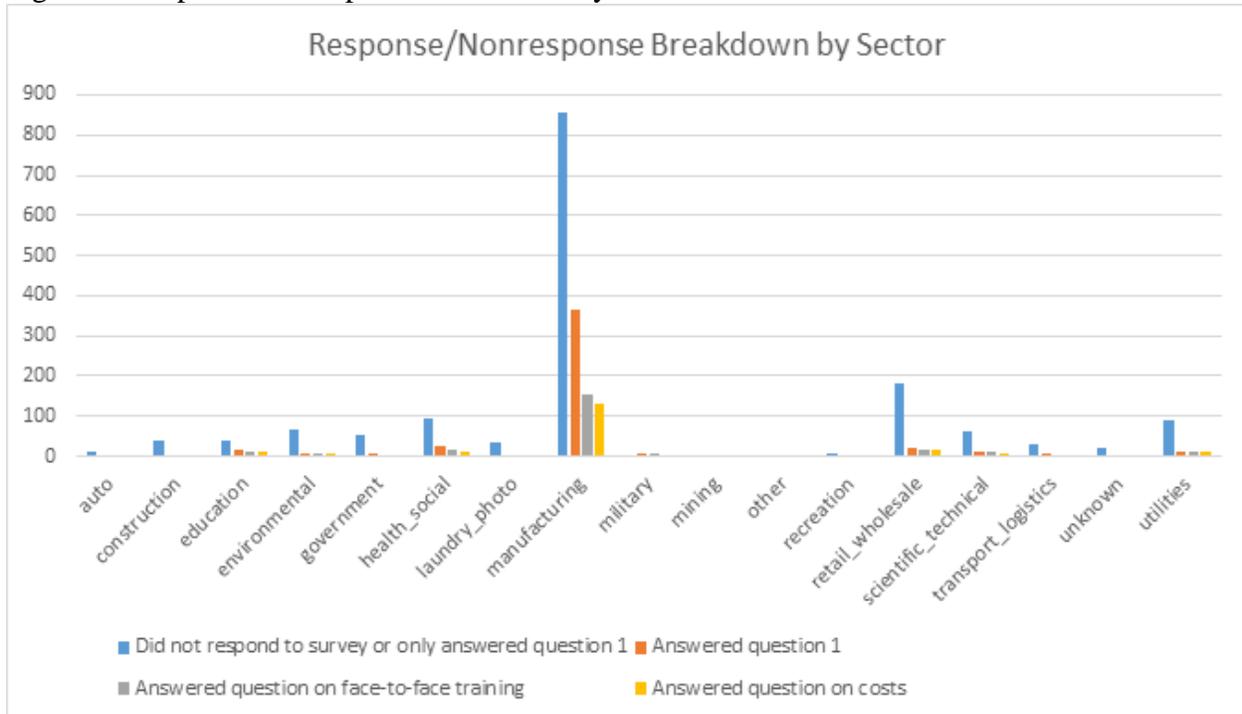


Figure 2: Response/nonresponse breakdown by sector (manufacturing excluded)

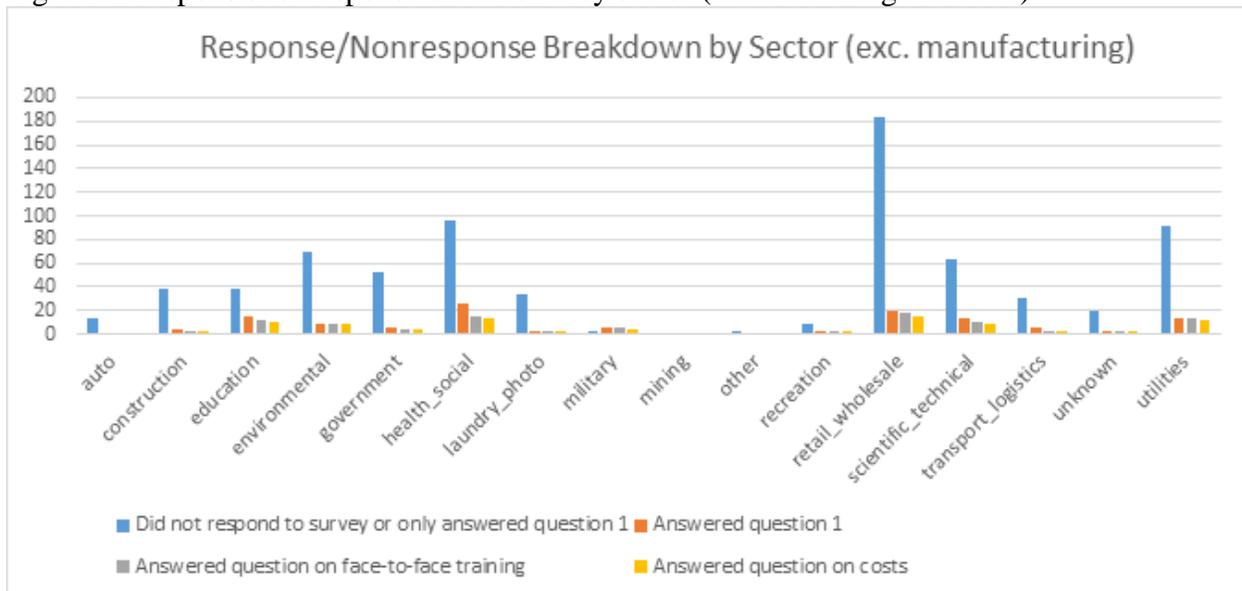


Figure 3: Response breakdown by sector

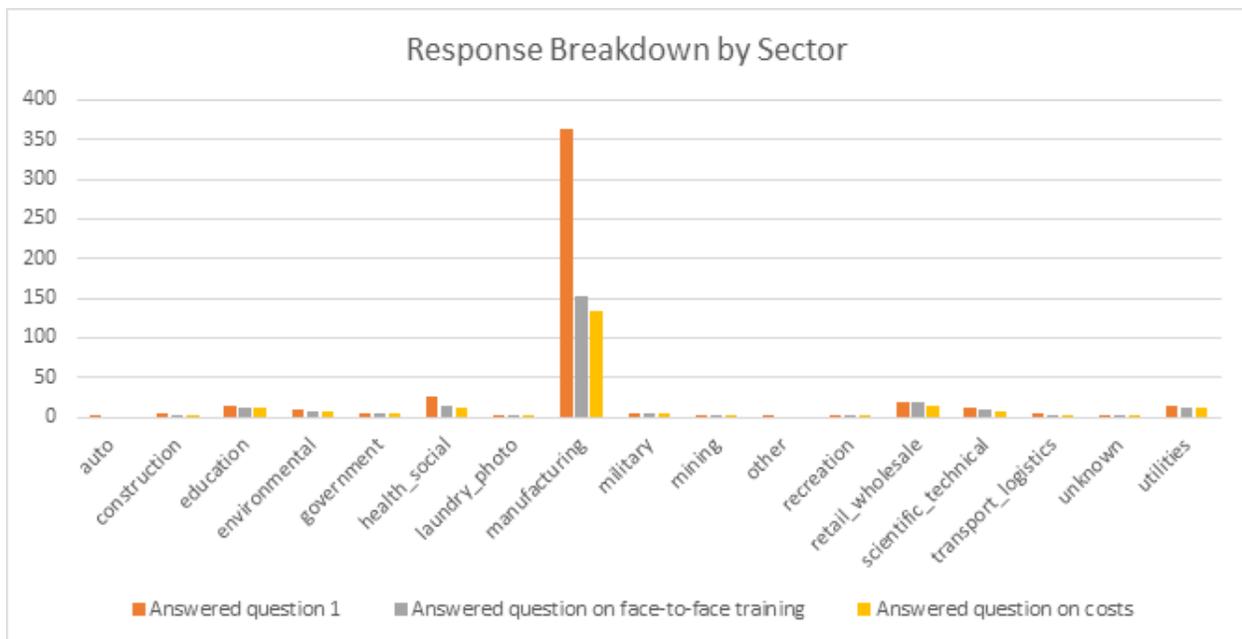
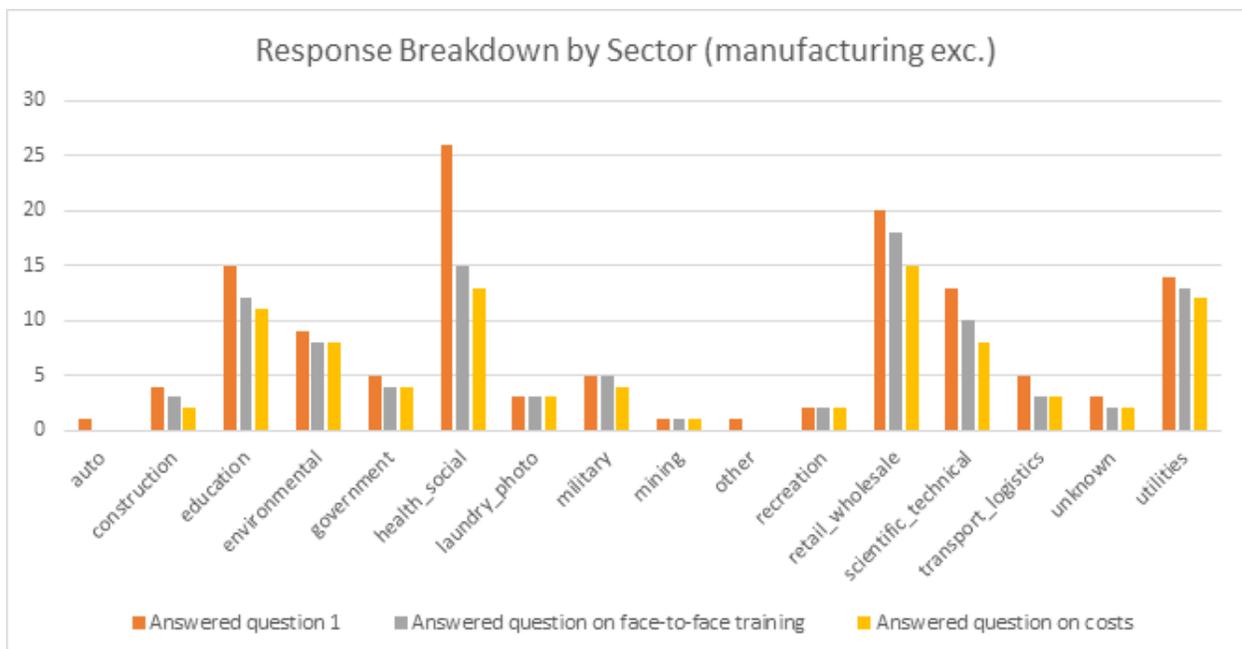


Figure 4: Response breakdown by sector (manufacturing excluded)



### *Metrics of Program Evaluation*

It should first be noted that the survey was administered primarily to hazardous waste coordinators, although it is possible for just about anyone to take the certification course. No waste generator-specific questions were asked of respondents who identified themselves at the outset of the survey as a transporter or as a consultant that took the certification course.

With guidance from NHDES, we developed questions related to several major categories of impacts of the HWCC program. Categories of interest included potential effects on compliance, regulator-regulatee relationships, and changes in facility costs. The certification program was thus evaluated based on respondent answers to questions related to these evaluative categories. This generalized feedback was improved by allowing respondents a chance to give specific and open-ended responses at the end of sections and on specific questions that allowed for a more comprehensive assessment on the range of possible certification program effects.

In terms of a metric for increased or decreased compliance, NHDES acknowledged that some data was already available to them as the principal regulator for New Hampshire hazardous waste generators. However, the survey was able to ascertain respondent confidence levels related to compliance and specific feedback regarding the training program, which offers a valuable perspective into the potential for increasing compliance through required and directed training courses such as this program instituted by NHDES. Moreover, an anonymous survey administered by a neutral third party provided an opportunity to collect feedback that respondents might be unwilling to provide directly to the regulator.

The training program's effect on the relationships between the regulated entities and regulators was of particular interest to NHDES, primarily because it is hypothesized that lowering institutional boundaries coupled with greater exchanges of information has the potential benefit of fewer infractions and fewer chances for environmental damage caused by the mishandling or disposal of hazardous waste. NHDES wanted to ascertain whether their unique program was better able to develop and maintain these types of productive working relationships. A sizeable portion of the survey questionnaire was therefore devoted to asking respondents about the professional relationships they built as a consequence of the HWCC program.

Questions concerning changes in facility costs following certification by NHDES were included in an attempt to quantify the financial impact of the HWCC program on hazardous waste generators to weigh these costs against program benefits ascertained in the context of our other metrics of evaluation. Cost data ultimately proved the least reliable measured category from the survey, as many respondents lacked access to accurate cost information, although these questions still added to the larger analysis of program effectiveness in terms of benefits and costs to facilities.

Other questions captured respondent data on basic facility characteristics such as generator status, the character and type of hazardous waste generated or managed, and other program metrics

of interest such as the value of face-to-face training compared to an online alternative. The survey cannot hope to capture all relevant metrics to evaluating the NHDES certification program, but it directly inquired about the existence and degree to which the program might be affecting hazardous waste coordinators and other related individuals that took the certification program as well as the facilities that they serve or interact with on a regular basis. Although we could not measure all the effects of the program, our team is confident that the combined efforts to tailor the survey as an instrument of program evaluation succeeded in capturing a significant portion of the certification program's true effects and allows for substantive quantitative and qualitative evaluation of the program.

### **III. Analysis of Results**

#### **A. Summary of Results**

We believe we received enough responses from hazardous waste coordinators to begin to draw some conclusions. Based on the demographic information collected, sampled respondents appear to be a representative distribution across the variety of types and sizes of hazardous waste generators. This provides us additional confidence in the results. Overall, the results support NHDES claims: that the training is effective; that respondents appreciate the proactiveness of the regulators; that relationships have improved; and that specific cost changes remain unknown, but the magnitude of these changes is generally not large and often not directly attributable to the program. Survey results strongly indicate the success of the HWCC program as a training mechanism and as a tool for improving relationships between industry and regulators.

Data on facility and trainee characteristics were collected in the early stages of the survey to provide an overview of respondents' basic information and allow for more in-depth analysis of results, elaborated below. While a majority of respondents listed requirements as reason for attending the training,<sup>4</sup> many also provided additional reasons, including networking, personal growth, a desire to ensure compliance, and to have additional on-site trained coordinators. Several commenters mentioned a better understanding of the various requirements their facilities must meet in order to reduce their generator status, and the corresponding regulatory burden, as ancillary benefits of attending the training and as motivators for attending.

Figure A2 provides a brief overview of changes in waste generator size following the HWCC training. A majority of respondents, 76.8%, listed that their facility's size remained constant, yet 15.6% of respondents stated that their size actually decreased. This could be, in the words of one comment, that facilities "found our correct size." Several commenters directly attributed a reduction in generator size or their facility no longer qualifying as a generator to the HWCC training. Generator size classification carries with it major ramifications for industry. At certain thresholds, market participants face new requirements for safety, inspections, and other management practices that can lead to increased costs or regulatory scrutiny. By attending the training, facilities were able to gain a clearer picture of their ideal generator size. Some hazardous

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<sup>4</sup> See Figure A1 in Appendix A

waste managers attended explicitly for the purpose of learning how to decrease their generator size. We consider this finding especially important because reductions in generator size are beneficial both from the standpoint of industry and the regulator, and in turn serve the public by reducing the overall quantity of waste generated and freeing up energy and resources currently devoted to complying with the more stringent regulations imposed on larger quantity generators. Additionally, we were able to identify characteristics of facilities that are useful in predicting whether generator size is likely to decrease after the training; these findings are presented in the next section.

The next set of responses reveals what should be expected from a well-run and thorough training. Figure A3 shows that approximately 96% to 97% of respondents agreed, either somewhat or strongly, with each of the following statements: that their ability to conduct hazardous waste characterization improved; that their employees' knowledge improved; and, that their facilities' ability to self-inspect had improved. The comments section provides specifics of how many of these facilities have improved operations following training. Examples include instituting best practices for on-site management, transportation, recycling and disposal; reducing waste generation; updating technologies; and streamlining management processes based on improved knowledge of requirements. These responses are all signs that the program has achieved one of its principal objectives, namely increasing industry knowledge of the complex regulatory requirements of hazardous waste management.

We also find that the training improves relationships between market participants and regulators.<sup>5</sup> This could be one of the main benefits of the proactive approach taken in the HWCC program. NHDES desired to move away from a command-and-control model of regulation to one of mutual participation with industry. By improving relationships, as evidenced by 94% of respondents agreeing that they are more likely to reach out to regulators when confronted with questions, both sides are able to avoid negative outcomes. Over 86% of respondents agreed with the statement that their relationships with the regulators has improved as a result of this program. Over 79% said that relationships within their organization have improved. While specific causation is not known here, this response could be a result of all employees having a better understanding of hazardous waste management and the necessity for certain procedures. Over 65% said that relationships improved with other facilities, which could be a result of the networking opportunities provided by the in-person training or through a shared baseline of knowledge.

One finding illustrated in Figure A4 is worth highlighting in particular: over 91% of respondents believed that they would be more likely to reach out to regulators if they had questions concerning environmental regulation compliance in other media outside of hazardous waste, such as air or water violations. This finding provides evidence that not only have relationships with regulators improved in the area of hazardous waste, but this improvement has possible spillover effects. It is possible that the training not only reduces the number of violations and improves environmental outcomes related to hazardous waste management, but may also improve compliance and environmental outcomes in other areas. Such spillover effects, whether to other

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<sup>5</sup> See Figure A4 in Appendix A

environmental media or to other states, represent a major potential benefit of this program and others like it and are worth investigating in greater detail in future studies.

The relationship improvement benefits of the HWCC program may be partly attributed to the face-to-face nature of the training provided by NHDES. An overwhelming majority of respondents,<sup>6</sup> 91%, believed that the face-to-face training was preferable to an online alternative. The comments on this section provide some nuance, showing that respondents believe face-to-face training allows for more interaction among industry participants, a more dynamic relationship with NHDES, and give participants the opportunity to “learn something new every time.” Specifically, respondents mentioned that the in-person training removed distractions that may be present in their work environments, which improved the training experience for them. Respondents also noted a major benefit was hearing concerns from other trainees, allowing them to share similar issues and responses. However, several respondents also mentioned the travel time required for the training as a concern, including a number who suggested offering online training for recertification. The comments provided in this section, such as those in other areas of the survey, provide NHDES with a rich source of participant feedback to draw on in considering the possibility of this change or other further modifications that might enhance the value of the HWCC program.

Proactive and continuous improvement in hazardous waste management practices has been a recurring theme in the benefits of training cited by survey respondents. By actively engaging with NHDES, 75% of industry participants<sup>7</sup> believe that they are less likely to have a violation found upon inspection. Reasons cited include the increased knowledge base of compliance coordinators and adjustments in practices learned at the HWCC training. Overall, the results indicate that the training has had a substantial impact for most respondents on improving their awareness of regulations and their willingness to reach out for assistance. The number of violations, which both industry and regulators want to decrease, is more likely to decrease following the HWCC training, according to the majority of survey respondents. This finding complements another finding from our questions about cost changes: respondents are more confident that costs were likely to decrease as they relate to possible violations.

However, we are not currently able to measure responses as reliably on the cost side compared to other aspects of the training. In particular, many respondents commented that they do not have access to cost information. While most respondents are confident that their chances of fines have decreased, it is unclear exactly what impact, if any, HWCC training has on the typical hazardous waste generator cost structure without more reliable data. This area holds potential for further analysis.

For every question in Figure A7, except as costs related to training, the highest number of respondents listed no change in costs. Some respondents listed cost increases in the areas of transportation, hazardous waste determination, training, contingency plans and emergency preparedness, which could be a result of compliance coordinators becoming more knowledgeable

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<sup>6</sup> See Figure A5 in Appendix A

<sup>7</sup> See Figure A6 in Appendix A

about industry regulations and implementing procedures that had immediate or tangible cost increases. A majority of respondents believed that costs increased overall, although most respondents said they believed the increase was not large.<sup>8</sup> We also found significant deviation from this trend, with a significant share of respondents reporting overall cost savings as a result of the program.

At this time, we cannot generally distinguish with confidence the effect of the HWCC program on cost, but initial results suggest cost changes vary considerably by facility. Moreover, aside from the direct costs of training, these cost changes are difficult to attribute to the HWCC program itself. In addition, these responses may be subject to a confirmation bias. Respondents attend the training and then implement new processes or technologies that increase short-term costs, but reduce the less obvious and less easily measurable cost avoidance of having a violation or the less obvious social and environmental costs. It is difficult to infer the overall financial impact of the program on industry because of both potential error in our data as reported and because of the inherent uncertainty associated with some of the cost areas, particularly fines.

On almost every question, respondents provided comments that addressed a litany of different issues and subjects. This information supports the overall conclusions we infer from the quantitative survey metrics and shows the nuance that we were able to derive from the survey. The number of comments may also indicate the validity of responses, as a large share of respondents were willing to provide qualitative support to their answers in the comments section.<sup>9</sup>

While industry consultants and hazardous waste coordinators were included in the initial survey at the request of NHDES, responses from these two groups were extremely limited and not the primary focus of the survey. This included thirteen responses from consultants and four responses from transporters, or roughly 2.6% and 0.8% of all respondents. These responses tend to support the same conclusions as the initial comments received from hazardous waste coordinators; a majority believe that New Hampshire hazardous waste coordinators are more knowledgeable than counterparts in other states, and feel a stronger connection with industry participants and regulators, as well as preferring in-person training. These comments may prove useful in providing anecdotal feedback to NHDES, although the sample size is too small to generalize these findings.

As an example, one consultant responded:

“My industry works very closely with many NH hazardous waste generators as well as NHDES. This training is beneficial for both our customers (by making them more knowledgeable) as well as [company name removed] by increasing awareness of regulations throughout our customer base. Overall this training opens up the lines of communication as well as instills a baseline of knowledge for people working in this field.

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<sup>8</sup> See Figure A8

<sup>9</sup> See Appendix B

We greatly appreciate this training and have been hoping other states will start something similar.”<sup>10</sup>

These anecdotes from consultants and transporters are instructive, although larger sample sizes are needed to infer trends about the effect of the training on these non-mandatory training attendees. We suggest that in-depth interviews be conducted with transporters and consultants, as their perspective and additional qualitative information pertaining to the program could be gained.

Our analysis indicates that, overall, the program is an effective training mechanism, with many respondents expressing their appreciation for the program’s regulatory outreach and affirming that their relationships with regulators had improved following program completion. The program’s effects on hazardous waste generator costs remain unknown but respondents were confident that costs associated with having a violation decreased and that the possibility of a hazardous waste violation decreased. This matches the goals of both industry and the regulators, which is to reduce negative environmental outcomes.

## **B. Analysis of Trends within Results**

In addition to the overall general trends identified among survey respondents, NHDES expressed an interest in a more detailed breakdown of survey results by characteristics of the respondent and facility. We analyzed results to identify trends using an ordered logit multiple regression framework. Each survey response was coded from a minimum value of 0 to a maximum integer value representing the highest response possible on a question. For example, “Please rate whether you agree or disagree with the following statement” was coded 0=Strongly Disagree, 1=Somewhat Disagree, 2=Somewhat Agree, 3=Strongly Agree. A codebook providing definitions of all variables used in these regressions is provided in Appendix C.

We selected the ordered logit model after considering three primary candidate regression models for understanding trends within the survey results: ordinary least squares (OLS), ordered probit, and ordered logit. Complete results of all models considered are provided in Appendix C. Here we report the ordered logit marginal effects because the ordered logit model provided a slightly better fit than ordered probit, while the results of both the ordered probit and ordered logit models are qualitatively similar. Both the ordered probit and ordered logit models provided significantly better fit than OLS. Specifically, the ordered logit model has the lowest log likelihood of the candidate models while estimating the same number of parameters and therefore has the lowest Akaike Information Criterion (AIC) of the candidate models. AIC is a commonly accepted criterion in the quantitative literature for comparing non-nested models, such as probit versus logit or logit versus OLS. In this case, using AIC to compare models provides identical guidance for sample selection compared to alternative criteria such as the Bayes-Schwartz Information Criterion (BIC). Therefore our choice of the ordered logit as the preferred model is robust and not dependent on the specific criterion used to evaluate fit, while the regression results themselves are also robust to the choice of functional form specification for the ordered model.

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<sup>10</sup> See Appendix B

We also investigated sample selection models using facility generator size and sector type to predict the likelihood of individuals answering the complete survey, weighting the regression results according to these factors thought to influence inclusion in the sample. Ultimately we rejected the sample selection models in favor of the simple ordered models because the sample selection models provided no evidence that sample characteristics biased the results of the simple models, and the models accounting for selection are less efficient than the simple models because they must estimate additional parameters. The complete results for the sample selection models are also included in Appendix C.

The marginal effects reported for the ordered logit model are based on the increase in the probability of choosing a particular response over other responses on a ranked scale. For categorical explanatory variables such as industry types, the correct interpretation of the marginal effect is the increased relative probability of choosing a particular response for the sector in question compared to a reference case. A brief explanation of the modeling technique is discussed alongside Figure 2 on the next page. In each case, we report the marginal effect for the next outcome above the median cutpoint for the sample, so that the reported coefficient can be interpreted as the predicted probability of choosing a the next higher response (e.g. “Strongly Agree” versus “Disagree”) compared to the whatever was the typical response. If the most common response was the highest outcome (i.e., most of the sample selected “Strongly Agree”), then the marginal effect is reported for that response.

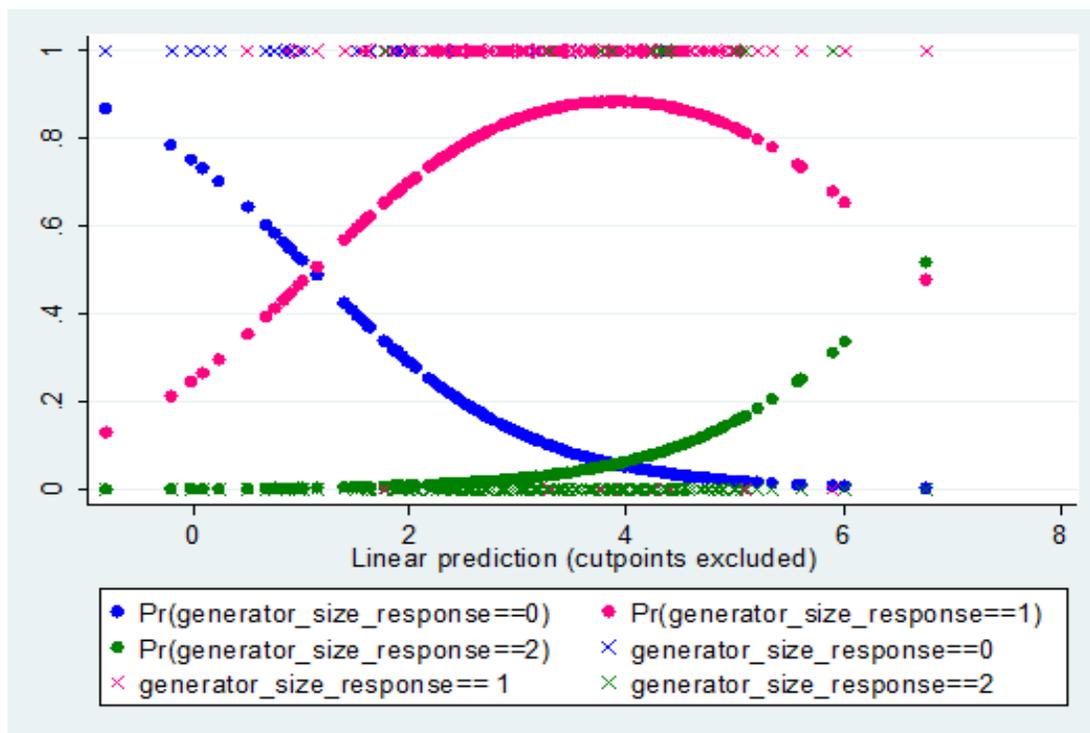
As an example, the number reported in the row corresponding to the category **health\_social** for a response variable scaled from Strongly Disagree to Strongly Agree and where the majority of the sample chose Strongly Agree, then the coefficient can be interpreted as the average change in probability of selecting Strongly Agree instead of Somewhat Agree. We chose the category **manufacturing** as our reference case for these regressions because doing so provides an easy basis for comparison to the majority of facilities in the sample. Therefore, a hypothetical marginal effect coefficient of 0.08 would indicate that health care facilities were about 8% more likely than manufacturing facilities to choose an agreement ranking one point up on the 0-3 scale.

As in interpreting any regression, it is also important to keep in mind the units of the covariates of interest when interpreting these marginal effects. For example, the variable **years\_certified** is measured in years, so each marginal effect is the probability of selecting a higher response category associated with each additional year of certification; similarly, the waste type variables are reported in pounds, so marginal effects identified are for each additional generated pound of the waste type in question. For example, in a regression where we investigate the effect of **years\_certified** on **facility\_cost\_approximation**, where the median common response was option 4 (“Costs increased by less than \$1,000”), a hypothetical coefficient of -.008 would represent a 0.8 percent decrease in predicted probability of selecting the next higher response compared to the most common response, in this case option 5 (“Costs increased by between \$1,000 and \$10,000”), *for each year that the trainee has been certified.*

Although the ordered logit regression is somewhat more complicated to interpret than a

typical multiple regression analysis using OLS, it provides a better fit to the data, and OLS has a greater risk of making errors in identifying effects of interest. Therefore, it is worth developing a basic understanding of the ordered logit model in order to more clearly analyze trends within our survey, or any survey where responses are most clearly understood as a set of ranked categories.

**Figure 5:** Plot of predicted (circles) versus actual (X's) responses to the question “Did your generator size increase (category 2), decrease (category 0), or remain the same (category 1) following HWCC completion?” using an ordered logit regression. The X axis is a linear combination of the explanatory variables in the regression, and the coefficients on each variable in this linear combination are selected by an optimization routine that attempts to match each predicted response as closely as possible to the individual’s actual response using a logistic link function that converts the linearization into a probability, with parameters constrained to maintain constant odds ratios for each response category across all the covariates.



The clearly differentiated graphic structure of predicted responses relative to the linearization of the data shows that the model is a good fit and is useful in identifying actionable trends: in this case, which types of facilities are most likely to reduce their generator size after completing the training?

A codebook defining all variables considered is provided in Appendix C as a guide to interpreting these tables as well as the supplemental regression tables that are also included in Appendix C. Tables of regression results for the ordered logit models identifying variation in the survey responses by facility and trainee characteristics are presented and discussed below.

Table 2: Marginal effects after ordered logit regression.

VARIABLES	(1) face_to_face mfx dydx	(2) probability_ violation mfx dydx	(3) facility_cost_a pproximation mfx dydx	(4) reach_out _rate mfx dydx	(5) rate_employee_ knowledge mfx dydx	(6) generator_size _response mfx dydx
generator_status	-0.0182 (0.0375)	0.00584 (0.0272)	0.0267 (0.0241)	0.0197 (0.0371)	0.0495 (0.0370)	0.0349*** (0.0110)
years_employed_n	0.000666 (0.00391)	-0.00319 (0.00308)	0.00278 (0.00240)	-0.000349 (0.00380)	2.75e-05 (0.00390)	0.00129 (0.000834)
years_certified	0.00927 (0.00904)	-0.00311 (0.00691)	-0.00402 (0.00566)	0.00700 (0.00891)	0.00824 (0.00904)	-0.00473** (0.00205)
NH_yes_no	0.0904 (0.0675)	0.0460 (0.0495)	-0.0284 (0.0428)	-0.00571 (0.0661)	-0.0189 (0.0667)	-0.00541 (0.0137)
employees_count	-1.65e-05 (5.59e-05)	-2.22e-05 (5.03e-05)	-1.61e-05 (4.30e-05)	2.42e-06 (5.88e-05)	-0.000113** (5.30e-05)	-1.53e-06 (1.23e-05)
Observations	226	208	198	224	228	223

Standard errors

in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \*

p&lt;0.1

The initial set of responses we examined for trends included several questions covering different program outcome areas: Do respondents prefer face-to-face training over online training? Do respondents believe the probability of a violation decreased after the training? Do respondents believe their facility's costs increased or decreased as a result of the training, and by how much? Did employees at the respondent's facility increase their knowledge of hazardous waste management regulations after the training? And finally, did respondents' facilities increase or decrease their generator size after the training, or did it remain the same?

Initial explanatory variables of interest were considered for the first pass and included as control variables in subsequent regressions in order to better estimate the effects of other covariates of interest. These initial variables included the current generator status of the respondent's facility, the number of years the respondent has been employed at the facility, the number of years the respondent has been certified by the HWCC program, a dummy variable indicating whether the respondent's organization operates outside of New Hampshire, and the respondent's estimate of the number of total employees at the facility.

Overall, the response pattern is similar across most of the dependent variables. There was little variation in the responses overall, with most respondents agreeing that the probability of a violation had decreased, that they preferred face-to-face training, and that employees' knowledge of regulations had increased. Because of the lack of variation in the response pattern among these

questions, all the models we examined lacked the statistical power to estimate statistically significant variation by these explanatory variables. The cost approximation question did show greater variation in its summary results, but no clear patterns emerge when relationships are estimated with respect to the explanatory variables examined here.

One response variable did show variation across the sample: the increase or decrease in a facility's generator size following the training. For this variable, we were able to identify significant relationships to several of the covariates of interest. The overall response pattern shows substantial variation, with most respondents indicating that their generator size remained the same, but with approximately one-sixth of the sample responding that their generator size decreased, and a handful of respondents reporting that it increased. We believe this is an important result in general, with reductions in generator size being one of the key measurable and tangible direct benefits of the HWCC program, albeit a benefit not all trainees may be able to access. Moreover, the patterns we are able to discern in terms of differentiation across different characteristics of facilities and trainees are also significant and actionable by NHDES in terms of tailoring the program to specific subpopulations. Reductions in generator size are highly desirable both from the standpoint of the regulator and the regulated facility, but not every facility is able to change its practices in ways that allow them to change their generator size. Therefore, it is worth understanding what characteristics of the trainee or regulated facility help predict whether facilities will respond to the training by reducing their generator size.

Two of the initial covariates are statistically significant in determining whether generators were able to reduce their size after the training. Generators of larger size to begin with (full quantity generators) are less likely than small quantity generators to reduce their generator size after the training. Holding all else constant across facilities, each increase of one level in generator classification, such as an FQG2 versus an SQG, is associated with a 3.5 percent increase on average in the likelihood of reducing generator size after training. This finding suggests that small generators have more opportunities than large generators to reduce their hazardous waste generation and streamline their hazardous waste management practices in order to attain a reduction in generator status. Each additional year that a returning trainee has been certified is also associated with a 0.47 percent increase on average in the likelihood of that trainee's facility reducing its generator status after the training.

Both of these findings are actionable. NHDES can use the training as an opportunity to highlight the benefits and requirements of attaining reductions in generator size to small generators in particular. NHDES should also be certain to point out the benefits of generator size reductions to new trainees, who may be unaware of the possibility and may not be able to distill this key benefit from the training on their own.

The analysis of trends within the survey results continues below with a breakdown of the same group of response variables based on characteristics of the waste stream itself.

Table 3: Marginal effects after ordered logit regression by waste type. Previous explanatory variables included as controls (full results omitted for brevity).

VARIABLES	(7) face_to_face mfx dydx	(8) probability_ violation mfx dydx	(9) facility_cost_a pproximation mfx dydx	(10) reach_out_ rate mfx dydx	(11) rate_employee _knowledge mfx dydx	(12) generator_size_ response mfx dydx
Waste_Types_P	0.00115 (0.00415)	-3.36e-08 (8.22e-07)	-0.000103 (0.00378)	0.0236 (0.807)	-0.00278 (0.0316)	-3.36e-05 (0.0885)
Waste_Types_U	0.000215 (0.000581)	5.60e-09 (1.35e-07)	0.000262 (0.00893)	-0.000567 (0.0194)	-0.000210 (0.00242)	-1.03e-05 (0.0271)
Waste_Types_F	1.05e-07 (3.36e-06)	-9.64e-11 (2.34e-09)	-3.03e-06 (0.000104)	-1.50e-06 (5.13e-05)	9.41e-06 (0.000107)	-1.23e-07 (0.000324)
Waste_Types_K	-0.484 (0.312)	4.14e-07 (7.35e-06)	<b>-0.236***</b> (0.0551)	<b>0.189*</b> (0.105)	<b>0.220***</b> (0.0796)	<b>-0.921***</b> (0.0401)
Waste_Types_Ignitable	-1.98e-06 (1.84e-06)	-0 (4.03e-10)	-6.71e-07 (2.30e-05)	-3.42e-07 (1.18e-05)	6.99e-06 (7.99e-05)	1.20e-07 (0.000315)
Waste_Types_Corrosive	9.55e-06 (1.32e-05)	-3.10e-09 (7.10e-08)	2.21e-06 (7.55e-05)	-2.75e-06 (9.43e-05)	-6.75e-07 (9.07e-06)	-3.58e-08 (9.43e-05)
Waste_Types_Reactive	-0.000131 (0.000119)	5.28e-09 (1.24e-07)	0.000186 (0.00634)	2.70e-05 (0.000929)	-0.000355 (0.00404)	3.12e-06 (0.00822)
Waste_Types_Toxic	<b>-1.65e-05**</b> (7.81e-06)	-0 (1.49e-10)	9.83e-06 (0.000335)	-6.00e-06 (0.000206)	-6.21e-06 (7.13e-05)	-1.75e-07 (0.000460)
Observations	71	68	66	71	71	69

Standard errors in parentheses

\*\*\* p<0.01, \*\*

p<0.05, \* p<0.1

We asked respondents to provide estimates of the annual quantity of waste generated in pounds for each of several categories of hazardous waste. Many of the respondents commented that they did not have this level of detailed information readily at hand. The lack of complete information available about characteristics of the waste stream is reflected in the smaller number of observations for the regressions in Table 3 compared to those in Table 2. Thus, whereas we have a high level of confidence that our sample is representative of the typical characteristics of New Hampshire hazardous waste generators, we are unable to express the same level of confidence in our analysis of the survey results by waste type. However, despite the limited sample, we do find some evidence that generators of K-listed waste in particular generate cost savings or smaller cost increases compared to similar facilities that do not generate K-listed waste.

It is worth noting that the lack of complete information about waste types may reflect the

inherent complexity of the regulations covering hazardous waste.<sup>11</sup> Many waste types are covered separately under different regulations based on characteristics of the waste such as reactivity or toxicity, while listed wastes may require specific procedures based on the industry that generated the waste, characteristics of the process that generate the waste, and specific ways the waste must be stored, transported, recycled, or disposed. Moreover, hazardous waste management is not the *raison d'être* for most hazardous waste generators. The majority of our sample, and the majority of New Hampshire generators, are manufacturers and other large industrial operations who generate hazardous waste as a byproduct of their primary operations. Hazardous waste management may be unique among all areas of environmental management in the degree of complex and comprehensive regulations covering behavior by such a wide variety of different actors both large and small. The fact that regulated entities may not be aware of all the regulations that cover the types of waste they generate, even after the training, gives a hint as to why the overall response to the HWCC training from industry appears to be so positive in general. We hypothesize that because the regulatory environment is so complex and difficult to manage, the positive intervention by the regulator in the area of compliance assistance represented by the training is viewed favorably by industry.

Table 4 on page 28 contains additional regression results for the same set of response variables, this time examining how the responses vary over the different sector classifications under NAICS. The pattern of results is similar to the results in Table 2. All the covariates from the Table 2 regressions are included as control variables, and none of them are found to be significant in the expanded model specification except the same variables that were already identified and discussed previously. Notably, when we control for sector, the marginal effect of **employees\_count** that had appeared significant in determining responses to **rate\_employee\_knowledge** drops to insignificance. Compared to manufacturing facilities, we find that military sites are about 50 percent more likely to reduce their generator size rather than remain the same, while utilities are about 27 percent more likely than manufacturers to reduce their generator size on average.

We hypothesize that generators of specialized waste streams, such as medical facilities, laundry and other cleaning services, and photography studios, as well as other groups that share these characteristics, such as smaller manufacturers, have a harder time reclassifying themselves than larger generators of more diverse waste streams. Generators of diverse sources of waste such as military bases and utilities seem to have more opportunities of finding ways to reduce their generator size. NHDES may find it worthwhile to investigate further what characteristics of particular facilities or sectors make them more amenable to reducing their generator size. Targeted interventions toward these specific sectors could include sector-specific training modules or simply more extensive analysis of the ways that management practices could be altered to better fit within the federal generator categories. Such interventions could prove to be relatively low-cost, high-impact ways for NHDES to extend the positive impact that the training has already had in this area.

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<sup>11</sup> A discussion of the different classes of hazardous waste and the regulations covering them is found at EPA's website at <http://www3.epa.gov/epawaste/hazard/wastetypes/index.htm>.

Finally, Table 5 on page 28 provides a breakdown of the cost changes in different areas by all the covariates discussed earlier. Again we find some variation by sector, with some sectors facing higher costs and some facing lower costs in different categories, but no consistent overall pattern within sectors or for changes in most cost categories. There is evidence of idiosyncratic variation by sector, although the limited cost information we were able to obtain from our respondents limits the quality of inference we can make with regard to trends by sector for cost changes in general.

Larger quantity generators were systematically about 6.4 percent more likely to report higher costs in transportation compared to the next smaller category of generator. However, this difference in costs between large and small generators does not appear to extend to other cost areas or to changes in costs overall. Several categories of facilities/organizations, including health care, scientific, and transportation/logistics, appear to have characteristics that make them less likely to report higher costs in the area of contingency planning. Referring to Table 5 may help NHDES to discern which sectors appear to incur the largest cost increases as a result of the training in different categories and help to understand the ways in which different industry cost structures are affected by the program and by hazardous waste compliance in general.

Table 4: Marginal effects after ordered logit regression by facility type. Explanatory variables from Table 2 are included as controls (full results omitted for brevity). Results relative to reference: manufacturing.

VARIABLES	(1) face_to_face mfx dydx	(2) probability_ violation mfx dydx	(3) facility_cost_a pproximation mfx dydx	(4) reach_out_ rate mfx dydx	(5) rate_employee _knowledge mfx dydx	(6) generator_size_ response mfx dydx
employees_count	2.79e-05 (0.000327)	-8.65e-06 (0.000794)	-1.67e-05 (5.52e-05)	-4.27e-05 (0.00139)	-0.000108 (0.00117)	-2.96e-05 (2.96e-05)
construction	-0.0774 (0.815)	0.0925 (7.347)	0.0137 (0.213)	-0.178 (4.218)	0.0275 (0.374)	0.0233 (0.0337)
educ	-0.0187 (0.246)	-0.0869 (5.711)	-0.0152 (0.0992)	0.0964 (3.554)	0.138 (1.832)	0.0209 (0.0295)
enviro	0.137 (1.977)	-0.0155 (1.452)	0.0194 (0.104)	0.116 (4.426)	0.0320 (0.392)	-0.191 (0.185)
gov	-0.198 (1.445)	-0.0475 (4.264)	<b>-0.194**</b> (0.0787)	-0.144 (3.662)	-0.136 (1.141)	-0.0805 (0.213)
health_social	-0.233 (1.594)	0.0605 (5.115)	0.102 (0.0945)	0.146 (5.655)	0.0872 (1.085)	0.0131 (0.0593)
laundry_photo	-0.283 (1.525)	0.0269 (2.381)	-0.0795 (0.147)	0.00413 (0.230)	-0.229 (1.473)	-0.0423 (0.156)
mil	0.307 (2.942)	-0.0512 (4.473)	0.0533 (0.151)	0.106 (4.007)	0.138 (1.858)	<b>-0.502**</b> (0.240)
mining	-0.685 (2.569)	-0.0414 (3.923)	0.0334 (0.251)	-0.417 (4.720)	-0.447 (0.930)	-0.00608 (0.243)
unknown	-0.163 (1.333)	-0.0443 (4.112)	0.124 (0.148)	0.206 (7.602)	-0.383 (1.305)	-0.118 (0.541)
retail_wholesale	-0.0773 (0.784)	0.0236 (2.108)	-0.00379 (0.0876)	-0.235 (5.105)	-0.139 (1.171)	-0.0699 (0.0926)
scientific_technical	-0.248 (1.578)	0.0351 (3.077)	-0.0593 (0.106)	0.300 (4.616)	<b>0.349***</b> (0.0340)	-0.00491 (0.0690)
transport_logistics	0.280 (3.575)	-0.0477 (4.277)	-0.0976 (0.124)	0.0308 (1.064)	0.0551 (0.683)	-0.0105 (0.125)
utilities	-0.117 (1.083)	-0.0127 (1.192)	-0.0706 (0.0812)	0.0464 (1.610)	0.122 (1.584)	<b>-0.267*</b> (0.150)
Observations	223	205	195	221	225	220

Standard errors

in parentheses

\*\*\* p<0.01, \*\*

p<0.05, \* p<0.1

Table 5: Marginal effects after ordered logit regressions for cost categories. Relative to manufacturing.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	facility_cost_c ontingency mfx dydx	facility_cost_d etermination mfx dydx	facility_cost _train mfx dydx	facility_cost _transport mfx dydx	facility_cost _fine mfx dydx	facility_cost _storage mfx dydx	facility_cost_ emergency mfx dydx
generator_status	0.0353 (0.0339)	0.0524 (0.0371)	-0.00460 (0.0465)	0.0644* (0.0361)	-0.00710 (0.0449)	-0.0245 (0.0271)	-0.00289 (0.0374)
years_employed_n	0.00273 (0.00349)	0.00542 (0.00368)	0.00102 (0.00516)	-0.000667 (0.00360)	0.000899 (0.00463)	0.000840 (0.00276)	0.000561 (0.00387)
years_certified	0.00119 (0.00801)	-0.00571 (0.00868)	-0.00596 (0.0150)	-0.000728 (0.00831)	-0.0119 (0.0136)	-0.00186 (0.00627)	0.000161 (0.00893)
NH_yes_no	-0.0790 (0.0642)	-0.0291 (0.0670)	-0.0495 (0.122)	-0.0683 (0.0661)	-0.121 (0.137)	-0.0152 (0.0485)	0.000744 (0.0668)
employees_count	-6.83e-06 (5.30e-05)	7.45e-05 (6.43e-05)	-1.07e-05 (7.25e-05)	-6.21e-05 (5.61e-05)	5.79e-05 (8.79e-05)	1.09e-05 (4.15e-05)	-1.62e-05 (6.10e-05)
construction	-0.125 (0.138)	-0.0770 (0.277)		0.0329 (0.361)	0.227 (1.346)	-0.0355 (0.215)	-0.155 (0.173)
educ	0.0380 (0.131)	-0.168** (0.0690)	-0.147 (0.162)	0.323** (0.157)	-0.0401 (0.194)	0.274* (0.162)	0.269 (0.172)
enviro	-0.105 (0.0804)	-0.0856 (0.106)	-0.156 (0.203)	0.0667 (0.152)	0.216 (0.840)	0.0791 (0.139)	-0.154** (0.0765)
gov	-0.113 (0.1000)	-0.0983 (0.151)	-0.524 (3.179)	-0.0194 (0.234)	-0.218 (0.327)	-0.0146 (0.146)	-0.144 (0.119)
health_social	-0.120* (0.0686)	0.167 (0.176)	-0.109 (0.176)	0.368** (0.180)	-0.0440 (0.180)	0.0758 (0.133)	-0.148* (0.0815)
laundry_photo	-0.106 (0.106)	0.00556 (0.217)	0.145 (0.617)	0.195 (0.275)	0.0764 (0.305)	0.0171 (0.170)	-0.145 (0.117)
mil	-0.0787 (0.135)	0.140 (0.264)	-0.334 (1.108)	0.0283 (0.205)	-0.180 (0.280)	-0.0212 (0.120)	0.0770 (0.257)
mining	-0.0317 (0.311)	0.0261 (0.377)	0.466 (3.155)	0.0834 (0.391)	-0.479*** (0.0400)	-0.0192 (0.238)	-0.148 (0.185)
unknown	0.309 (0.381)	0.293 (0.354)	-0.0427 (0.343)	0.423 (0.299)	-0.0131 (0.310)	-0.0334 (0.155)	0.216 (0.354)
retail_wholesale	0.0709 (0.145)	-0.0168 (0.126)	-0.130 (0.149)	0.0934 (0.142)	0.172 (0.463)	-0.0500 (0.0700)	-0.105 (0.0956)
scientific_technical	-0.171*** (0.0353)	-0.0438 (0.144)	-0.340 (1.117)	0.136 (0.195)	0.104 (0.246)	-0.115*** (0.0424)	-0.0352 (0.161)
transport_logistics	-0.164*** (0.0410)	-0.0776 (0.197)	0.485 (2.241)	0.0784 (0.277)	0.227 (1.548)	-0.0179 (0.171)	-0.150 (0.132)
utilities	0.00539 (0.109)	-0.143** (0.0689)	-0.215 (0.299)	-0.0807 (0.0879)	0.183 (0.530)	-0.0601 (0.0581)	-0.157** (0.0647)
Observations	178	183	187	183	168	186	185

Standard errors in

parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \*

p&lt;0.1

#### IV. Recommendations and Conclusions

The principal overarching conclusion of this report is that the New Hampshire state certification program for hazardous waste coordinators has been successful in achieving its stated goals of increasing knowledge of regulations among hazardous waste generators and other key industry players. The vast majority of respondents to our survey either somewhat agreed or strongly agreed that the training increased the knowledge of hazardous waste regulations at their facility, and the vast majority also agreed that they were more likely to reach out to regulators with compliance questions about hazardous waste or other media, with over 90% agreeing with both of these statements.

Within these results, we identify a handful of trends that can be used to further augment the value provided by the NHDES training.

- NHDES should use our survey results to promote the training and compliance assistance framework to other state agencies and EPA as a supplement to the enforcement framework developed under RCRA.
- Using our study as a baseline, NHDES should continue to collect data and refine analysis of the program, focusing in particular on different segments of the regulated community such as specialized training for those with limited waste streams or specialized programs for educational institutions.
- Data collected from New Hampshire in this study and others can be extended using a propensity score matching framework to compare New Hampshire facilities to similar facilities in other states to positively identify treatment effects of the training. Data that could potentially be combined with survey data include inspections and violations data as well as EPA Toxics Release Inventory data. Unfortunately, there are a significant number of practical difficulties in using either of these datasets. However, these obstacles may not be insurmountable if it is sufficiently desired to ascertain this effect.
- Based on feedback received in comments, New Hampshire should consider the possible benefits of offering an online recertification option for returning trainees.
- In-depth interviews would be a better way to ascertain information than surveys for transporters and consultants, as few responses were received from this category.

Finally, important research questions going forward include:

- What sources would have more reliable data on program costs for regulated entities?

- What is the actual treatment effect of HWCC certification on compliance/environmental outcomes?
- Is it possible to increase the impact of the training by catering more specifically to different segments of the regulated population?
- Are there spillover effects of this program in other states?
- Are there spillover effects of this program to non-hazardous waste media?
- Could a program like this one achieve similar results in other states, e.g., could a large state like California achieve the same quality of personal relationships as those we observe in a small state like New Hampshire?

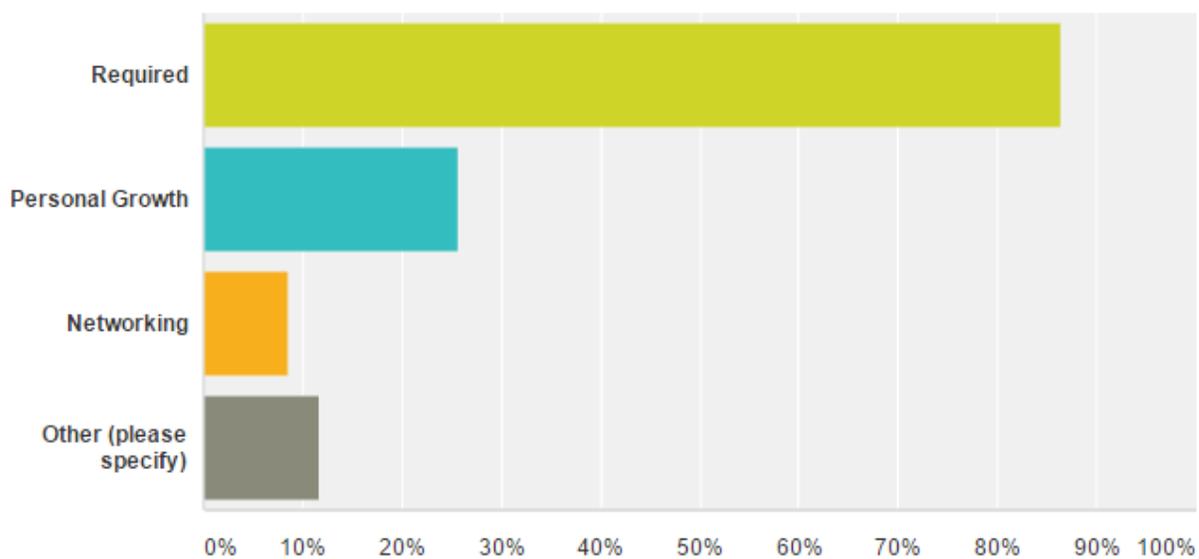
In summary, we believe the report provided here makes an important contribution in two ways. First, we provide strong evidence confirming NHDES' hypothesis that the compliance assistance, and in particular the design and administration of the HWCC program, is successful in improving knowledge and relationships and appears to have strong benefits from the standpoint of ensuring compliance with regulations and improving environmental outcomes. Second, this report provides a significant contribution toward answering a key question in the environmental policy literature: what is the proper role of the regulator in balancing between compliance assistance and enforcement?

**Appendix A: Survey Results**

**Figure A1**

**Please list your reasons for attending**

Answered: 316 Skipped: 174

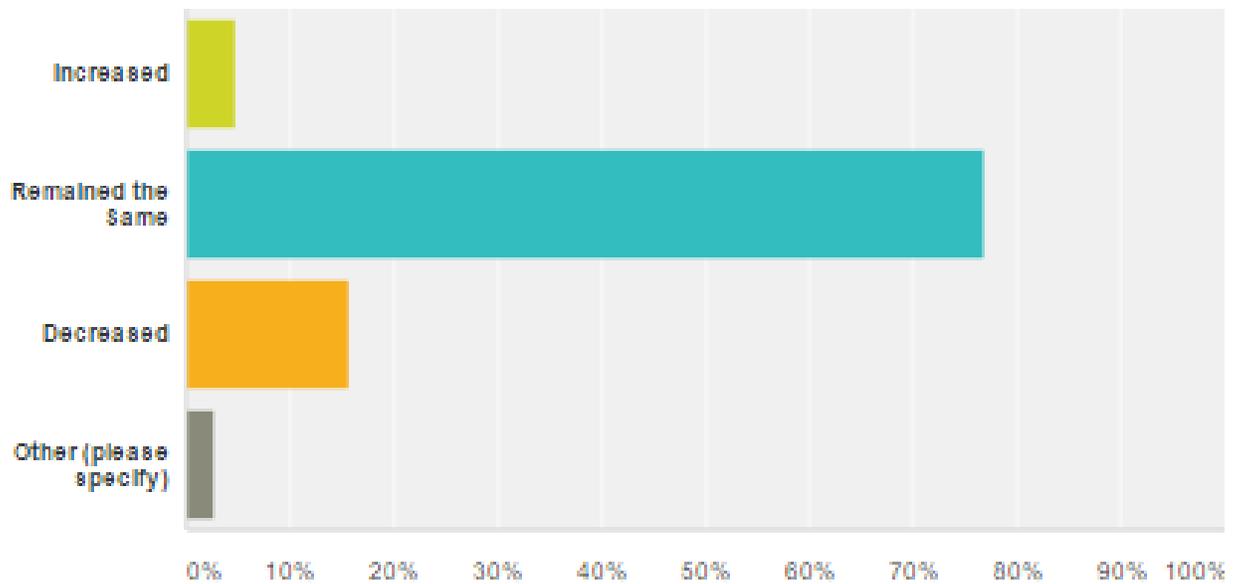


Answer Choices	Responses
Required	86.39% 273
Personal Growth	25.63% 81
Networking	8.54% 27
Other (please specify)	11.71% 37
Total Respondents: 316	

Figure A2

### Has your generator size changed following completion of the HWCC program?

Answered: 250 Skipped: 240



Answer Choices	Responses
Increased	4.80% 12
Remained the Same	76.80% 192
Decreased	15.60% 39
Other (please specify)	2.80% 7
<b>Total</b>	<b>250</b>

**Figure A3**

Please rate the following:

**Please rate the following**

Answered: 256 Skipped: 234

	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree	Total	Weighted Average
Our facility's ability to conduct hazardous waste characterization improved following HWCC	61.72% 158	34.38% 88	3.13% 8	0.78% 2	256	1.43
Employees at our facility have improved knowledge of effective hazardous waste management procedures following HWCC	65.23% 167	31.25% 80	2.73% 7	0.78% 2	256	1.39
Our facility's ability to conduct self-inspections has improved following HWCC	65.63% 168	32.03% 82	1.95% 5	0.39% 1	256	1.37

Figure A4

Please rate the following:

**Following HWCC program completion:**

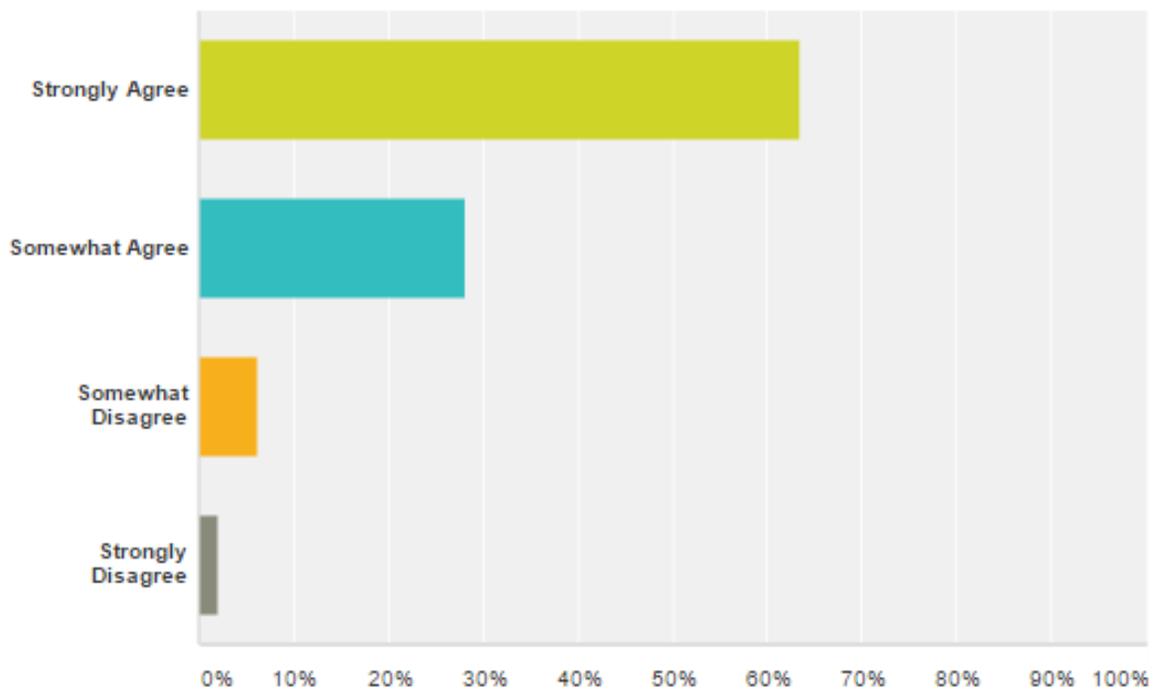
Answered: 252 Skipped: 238

	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree	N/A	Total	Weighted Average
▼ We are more likely to reach out to regulators if we have questions about compliance regarding any hazardous waste generation or management issues.	65.08% 164	29.37% 74	1.98% 5	1.19% 3	2.38% 6	252	1.38
▼ We are more likely to reach out to regulators if we have questions about compliance regarding environmental regulations for other media (air, water, etc.).	60.32% 152	31.35% 79	3.17% 8	1.19% 3	3.97% 10	252	1.43
▼ Our facility's relationship with regulators has improved	51.19% 129	35.32% 89	3.97% 10	0.40% 1	9.13% 23	252	1.49
▼ Professional relationships within our organization have improved	35.32% 89	44.05% 111	6.75% 17	1.19% 3	12.70% 32	252	1.70
▼ Employees at our organization have improved their relationships with other organizations' employees.	22.62% 57	43.65% 110	8.33% 21	1.19% 3	24.21% 61	252	1.84

**Figure A5**

**Face-to-face training is preferable to online training.**

Answered: 252 Skipped: 238

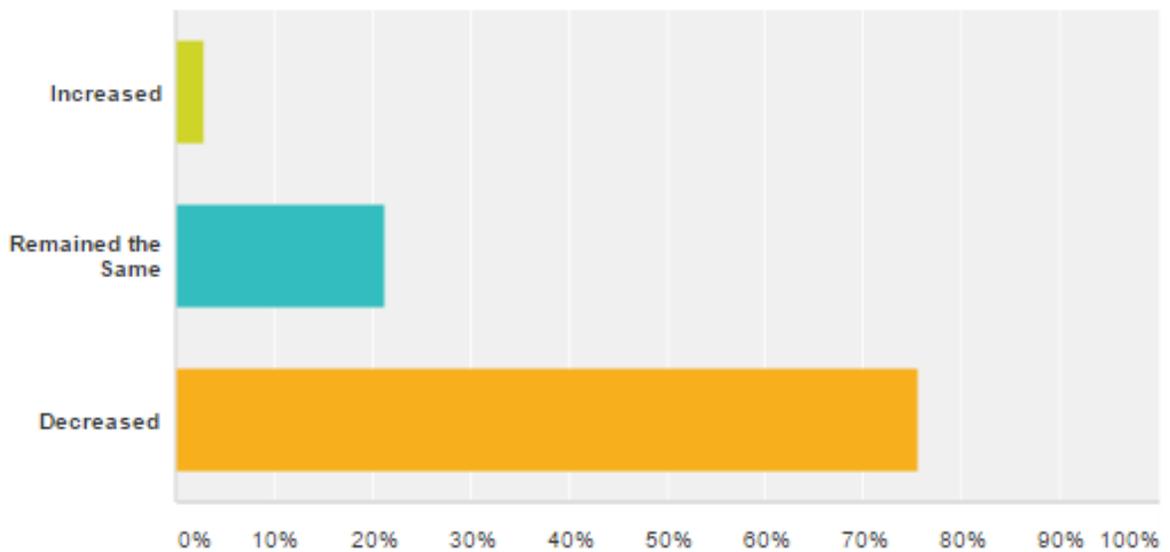


Answer Choices	Responses	
Strongly Agree	63.49%	160
Somewhat Agree	28.17%	71
Somewhat Disagree	6.35%	16
Strongly Disagree	1.98%	5
Total		252

**Figure A6**

**Do you believe the probability of having a violation found during an inspection increased or decreased following HWCC training?**

Answered: 234 Skipped: 256



Answer Choices	Responses
Increased	2.99% 7
Remained the Same	21.37% 50
Decreased	75.64% 177
Total	234

**Figure A7**

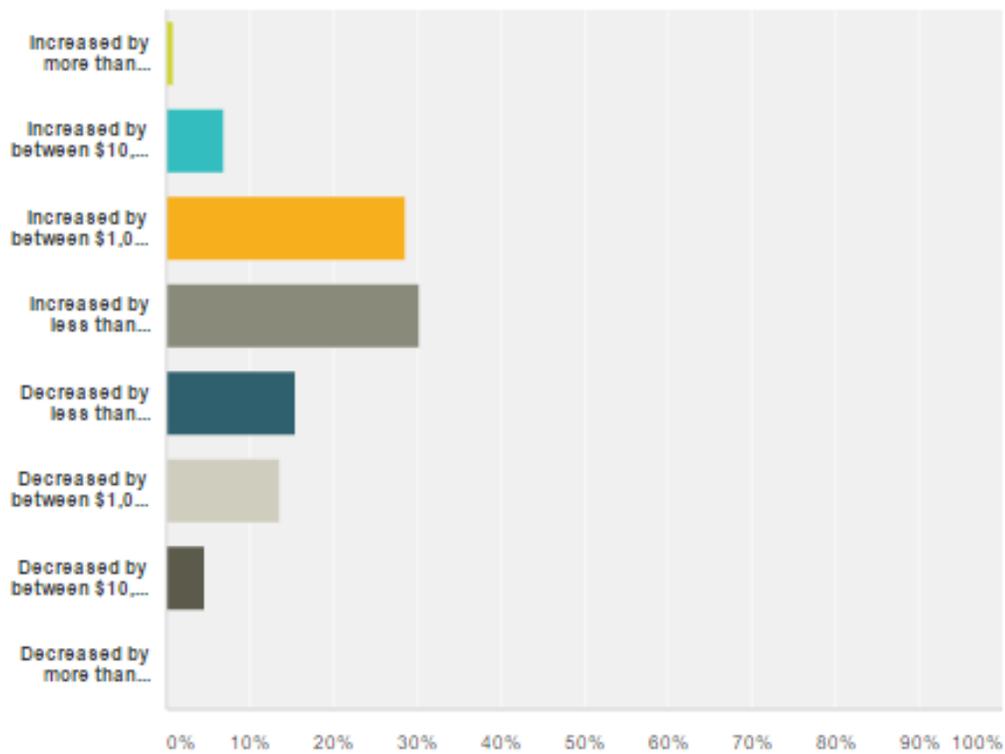
Please state whether your facility's costs increased or decreased in each of the following areas since the inception of the HWCC program:

	Costs increased	Costs decreased	No change	N/A	Total	Weighted Average
Hazardous waste determination	26.24% 58	12.22% 27	54.30% 120	7.24% 16	221	3.30
Transportation of hazardous waste	27.15% 60	17.19% 38	48.42% 107	7.24% 16	221	3.23
Training	47.96% 106	9.50% 21	37.10% 82	5.43% 12	221	2.89
Contingency plan	19.91% 44	5.43% 12	65.16% 144	9.50% 21	221	3.50
Emergency preparedness	23.08% 51	4.07% 9	66.52% 147	6.33% 14	221	3.46
Chance of fine due to violation during inspection	4.52% 10	39.37% 87	40.72% 90	15.38% 34	221	3.43
Hazardous waste storage	17.65% 39	13.12% 29	62.44% 138	6.79% 15	221	3.48

Figure A8

Please provide an approximation of the total annual changes in costs to your facility as a result of the HWCC program:

Answered: 221 Skipped: 269



Answer Choices	Responses
Increased by more than \$100,000 per year	0.90% 2
Increased by between \$10,000 and \$100,000 per year	6.79% 15
Increased by between \$1,000 and \$10,000 per year	28.51% 63
Increased by less than \$1,000 per year	30.32% 67
Decreased by less than \$1,000 per year	15.38% 34
Decreased by between \$1,000 and \$10,000 per year	13.57% 30
Decreased by between \$10,000 and \$100,000 per year	4.52% 10
Decreased by more than \$100,000 per year	0.00% 0
<b>Total</b>	<b>221</b>

## Appendix B: Respondent Comments

### Please provide any comments you have related to changes in your facility's operations as a result of the HWCC program:

- None, upper echelon will not listen.
- We do a lot of our own training but it nice to hear from the NHDES perspective.
- None.
- I am no longer in a role that works with this facility I am filling out this questioner because it is sent to me on a weekly basis, and I was asked by one of your representatives that I spoke with to inform them that I am no longer there, that I need to fill it out anyway.
- Discovered one of our wastes was being incorrectly classified as hazardous - by correcting its status we qualified as a small quantity generator.
- A better knowledge of chemical storage and satellite areas.
- When I first began at this job we were list as a FQG. Based off of my experience in training, I was able to determine that we were a CESQG.
- We screen and prohibit hazardous material form coming on site.
- Corporate policies have been modified at facility level to accommodate state-specific requirements.
- HWCC training has provided our company tremendous knowledge to build and install many other programs outside of Hazardous Waste Management. We used ideas from this training to install an effective Contingency Plan, OSHA Safety Training, and numerous other safety and environmental management programs. This program is by far the best offered by any government run program. It is the primary reason I have 3 of my management team certified we when we are only required to have 1.
- The elective courses, after the first certification course, are excellent sources of information for continuous improvement.
- We are nearly complete with a clean-up of all facilities and look to become a non-generator in 2016.
- We are compliant and are able to stay that way.
- I was told by the parent company I needed to do this even though we don't generate hazardous waste.
- We have made a lot of changes related to our pharmaceutical waste.
- Overall awareness of what people are working with.
- I was only a HWCC for 1 year before moving on to a different job no longer generating hazardous waste.
- We are not a generator.
- Has helped a lot in planning, training and developing company protocols.
- Improved training, awareness, and weekly SSA and 90-day storage area inspections as well as improved management of these areas.
- Have used many of the suggestions that are discussed in HWCC Training Sessions.
- We found that some of the items we've been removing as [Hazardous] waste are in fact recyclable.

- Compliance in getting training and contingency reports created as well as annual training for non HWCC employees.
- Regulatory Compliance Competency.
- No changes made.
- No change in operations; Sustainability and knowledge for coordinators has increased.
- Improved safety.
- Limited permit logs.
- Switched to non-haz parts washers, retested waste oil using proper method and were able to show that it was non-haz, versus hazardous waste.
- We have a very organized hazardous waste management procedure.
- Went from getting an LOD in 2008 for several violations, before I was an HWC, to getting no findings in 2013 in an audit from the EPA conducted for the NHDES.
- We have worked to eliminate our hazardous waste streams.
- Training makes us more vigilant. We now keep a log of generated versus shipped wastes. This helps us understand our waste stream much better.
- No comments.
- The HWCC program empowered our everyday HW handlers with enough knowledge to handle 'easy' issues by themselves and know when to ask about more involved issues.
- Better prepared for audits.
- Reducing waste has become a goal.
- When we were part of the program the answers to question 21 applied.
- We are cleaner and much better about any and all wastes and general cleanliness. Our training has improved and we believe we function more safely.
- We use an outside company to assist in waste codes and transportation. After HWCC we are better at self-inspections and storage on site.
- Better Understanding of Regulations.
- Improved awareness and controls.
- Improved storage area.
- Better satellite areas, inspections.
- The HWCC imparts the sense that the State DES Haz Waste Group is a resource for NH generators: they provide useful training and are available if a generator needs help answering questions related to regulatory interpretations or other waste management questions.
- Better Inspection Plan, Better control of Satellite areas.
- Improved regulatory compliance in satellite accumulation areas.
- Our facility has more knowledge of how to care, handle, and dispose the hazardous waste that is produced thru our process. We also gain knowledge working closely with our transporter that all regulations are properly followed.
- Every year I attend, I always bring back something practical that makes it easier to maintain compliance. The HWCC workshop covers so many topics, i can pick up on details of the regulations I may have overlooked.
- The NHDES HWCC program provides an excellent opportunity for members of the regulated community operating within the State of New Hampshire to meet with knowledgeable staff of the agency to discuss, learn and understand both federal and state hazardous waste management requirements in an open, non-threatening and non-adversarial manner.

- I have tried to lessen the amount of waste generated by site activities.
- Created a Contingency plan & a used oil program.
- We have established an emergency action plan. We also have established protocols for universal waste like our used oil program.
- There are more personnel that are formally trained due to the HWCC program and more "eyes" on the facility production floor is always a good thing. We know how to safely and properly handle any waste that is generated.
- We have a great HW education program now.
- Greater awareness of hazardous materials management
- Reduced Waste.
- Provides valuable face to face time with employees of the NHDES.
- The importance of conducting a waste determination and current trends in errors seen in the field.
- This program is an excellent way for businesses to learn what the State is looking for. Our compliance would seriously be in jeopardy without this program. We have updated our training requirements. We have changed some several work practices due to this training.
- The training has increased awareness of the regulations for Hazardous Waste Coordinators and handlers at our facility and enabled handlers to exhibit a healthy questioning attitude relative to hazardous waste management. Direct access to regulatory experts at NHDES is extremely helpful and valuable.
- More employees are certified and regularly participate in our HW shipment.
- Strengthened our inspection protocols, improved our contingency plan. Strengthened our relations with NHDES.
- We have a far better idea of New Hampshire's state hazardous waste regulations.
- Solvent recycling, increased general awareness for compliance.
- I was laid off from the Company in November 2012.
- Having multiple manufacturing sites in southern NH, we have 3 employees who participate in the HWCC. This allows for much more consistent understanding of rules and application of procedures across all site.
- Better knowledge of Hazardous Waste Procedures.
- training CD an asset for training all employees at site. Responses provided are for one of two sites only. Public road requires 2 EPA ID [numbers].
- I have eliminated 1700 [pounds of] F006 per month and increased recycled dollar values significantly.
- Able to recycle our machine coolant.
- NHDES provided impetus and encouragement for transition to small quantity generator status.
- Evaluated waste streams and looked for ways to reduce them.
- Just brings a better level of awareness to what we do and what we have done to improve what we plan on for the future.
- Problems are dealt with in a timely manner; DES hasn't needed to inspect us in a long time.
- All staff is much more informed based on the knowledge that I have brought back from the training.
- We try very hard to stay a SQG! We know how much extra work being a FQG is.
- Employees are able to correctly handle and document hazardous waste policies and procedures.

- We have learned to be more aware, conscious, responsible, and compliant about the waste from our process.
- We went from FQG to SQG as a direct result of the state's [HWC] classes.
- The HWCC training is the best training on HW which I have attended. They provide the HW regulatory compliance regulations in a clear and concise manner. It is easy understood to know what is required. They use unique examples to drive home their point! They actual pictures to re-enforce their concepts too! They are able to provide area of opportunities to assist with maintaining HW and non HW compliance. They are very approachable, extremely knowledgeable on their subject matter! They are an awesome resource for any type of questions or concerns! The instructors - Sue and Tim are held in great regards!! The very best!
- We have significantly changed the way we handle our waste since the HWCC gave us a source of education as well as a forum to ask questions and get real answers.
- Our increase in waste is due to production demand, we do waste reduction analysis, and recycle as much as possible.
- Learned a lot more about hazardous waste, how it should be managed and stored.
- I like the training that's conducted.
- I learn the typical compliance failures of others in the state when we review our quarterly reports at the start of the class. Gives me reality check on where we are relative to others.
- I came to the Town with some existing experience with HW and implemented what I knew to develop our own program.
- Employees gain some knowledge. However they are unable to pay attention once lunch passes. If there were more hands on activities and other ways of learning then they might be able to take more from the course.
- Upper management has become more aware and receptive to H.W. rules and regulations.
- Awareness is key...by teaching what we are to know, we too bring it back to our facilites and teach others.
- Able to internally train other personnel on hazardous waste management topics, on an ongoing basis through the years.
- We have a more knowledgeable and trained staff.
- We have a much better knowledge base.
- Our company employs a team of 4 EHS professionals who are charged with ensuring compliance with hazardous waste rules (among other safety & environmental duties). The HWC Certification is a good refresher, but has not drastically changed our waste management policies.
- The coordinator program is fantastic!
- The overall operation has increased dramatically during my tenure and completion and maintenance of HWCC however as I left my position in October of 2012 I don't know of continued success.
- I am no longer a NH HWCC.

## **(Following Agree/Disagree: Face to Face Training is Preferable to Online Training): Why or why not?**

- Questions and discussions within the group are often valuable
- Depends if one wants to attend new class, but lots of repetition every year.
- Learn more in a classroom setting
- More knowledge can be obtained and disseminated in a face-to-face training environment.
- Able to focus more in person
- Nice to be [a] part of an audience instead of in front of a computer.
- You are able to ask questions when needed.
- Its only once a year
- Face to face you can ask questions
- Class interaction, Q&A
- Better learning
- Easier to receive one on one discussion to a particular concern
- Face to face communication is better
- Easier to ask questions and hear what other facilities deal with
- Travel too far, webinar would work as well
- Because most face to face training is not straight to the point.
- Personal opinion.
- I think it much better way to learn. There always a lot of questions to ask. Also the teachers are usually experienced in the field which is much better than trying to find an answer on the computer.
- Sometimes there is not enough time to get into a classroom setting
- I personally get a better feel of what is being said
- There are so many variables that I really feel that this class needs to be done in person.
- Easier to ask questions with face-to-face training.
- Online training is more convenient than F2F but lacks the opportunity to interact with trainers and hear of other generators questions/experiences.
- Networking
- The Training Team at NHDES is highly talented and Susan Francesca has an ability to recognize when someone needs extra help.
- Need interaction with other Environmental Managers.
- Distance learning is less effective than face-to-face with subject matter experts.
- Regulations are often open to interpretation. Training offers an opportunity to get the correct interpretation from regulators.
- Time (less travel)- though prefer face-to-face.
- The student - teacher engagement is much stronger in a face to face (classroom) setting.
- It allows interaction when questions or confusion arises.
- It is difficult to get time off to go to a program.
- Although I feel it's good to learn face to face, and personally I learn better that way, it's just not always convenient to get out of the shop for the day. And driving to Concord is over an hour ride for me. Plus if trainings were done online, the modules wouldn't be "Full".

- With online training there can be too many distractions
- As someone who has gone through the program many times an online option would be nice.
- It's harder to answer questions if there is no expert to talk to.
- Interaction with instructors and other attendees is important, asking questions, etc.
- Able to interact and ask questions
- Due to the volume and complexity of HW, initial training class should be face to face, but would consider recertification training be done online or at least have that option.
- Able to ask specific questions to odd situations to better understand the requirements and best management practices.
- Face to face training allows the student to ask questions
- Can get questions answered quickly or are directed to someone who can answer the Question.
- Because of the interfacing with other students .
- Harder to ask question on a web site.
- Online training for experienced Hazardous Waste Coordinators could be a helpful option.
- All my years being certified, I've seen most people use breaks to ask questions mostly related to just their company but didn't want to ask via phone or email.
- Getting the training from the "Source" can't be beat, especially in areas that can be subject to interpretation.
- Better retention
- Face-to -face offers the ability to get interpretation of regulations and have them explained; ability to have questions answered immediately.
- Depends on the instructor
- Easier to ask questions
- Not able to fully concentrate with online training. Too many distractions.
- Questions answered.
- Two way feedback - Human interaction
- It is easier the person is right there to answer any questions.
- You have a face to ask a question from
- Q&A is more effective during training
- Face-to-face training is more effective
- Immediate answers to questions, clarification is easier understood.
- Online training will stay on point, but doesn't always answer all questions
- Direct dialogue.
- Immediate Feedback.
- Being out of the office, to limit distractions. Better information flows in the class.
- I don't see any real advantage to face to face - Online is great for me.
- Certain examples that may apply might be discussed. An overall learning for many that does not translate with other types of training.
- More interaction with employees of other companies.
- You need to get out of the office and focus on the training at hand. Online often means multitasking.
- It is more convenient to complete training online.
- Either type completes the certification. Neither is hands-on training.
- Ability to hear others' questions and to interact with the State employees is important.

- Questions that come up.
- Because you can ask / seek clarification on a point or have an item re explained.
- Easier to be distracted during online training.
- Relationships.
- The requirement to attend a face-to-face training program not only decreases cost efficiency, it also increases carbon footprints in terms of the requirement to travel to another location whereas online training allows an individual to complete training around their daily activities without the need to travel to a satellite location.
- If it is a repetition of the same materials seen multiple times, an online refresher may be more efficient.
- It's more connected and personable
- More descriptive. Higher level of communication.
- I heard many comments from others who attended as to ways their own company has dealt with issues or different scenarios.
- Should try online once and evaluate results.
- Offsite assures focus on training.
- Face to face has a place, for initial training, follow-up could be done online for refresher/renewals.
- Questions can be answered right away. I feel like I get more out of in-person training.
- It is very useful to hear other people's questions in-person and network with others at training and ask them how they have dealt with similar issues.
- Online training is not always interactive.
- Better for coordinators. Online fine for generators.
- Online training is more convenient for scheduling purposes and there aren't a lot of courses offered in southern NH so online training would be easier.
- Interaction from other companies.
- More interactive.
- it depends on the individual
- Can learn at your own pace and don't feel pressure to keep up if you are "stuck" on a particular item.
- The FTF trainer will always bring real life examples that are relevant to that specific audience. Also allows for real time Q&A.
- I would like to see the ability to do 50 % of the training online as the full 8 hour day refresher is extremely long.
- Face-to-face training provides for a more interesting exchange of ideas and promotes open and direct discussion about the various regulatory topics covered.
- I think when you are at training you are more focused.
- Online is more convenient.
- Easier to pay attention.
- I feel face to face training for me is better retained.
- Face to face training might be preferred but takes more time out of our busy schedules. There is also adequate time for Q&A.
- Enables direct group discussions, immediate feedback
- I believe a classroom setting is more inductive for learning

- Time commitment and travel distance
- More personal.
- Chance to ask questions, and multiple ways to learn (visual, audial, etc.).
- Some people can't get to training so online works better.
- Retention and more interaction with other peers
- Face to face provides greater opportunities for an open dialogue about managing hazardous materials
- I am old school and believe in hands on training
- Able to interact with instructors
- Opportunity for interaction.
- Classroom discussion is helpful
- To address questions with field workers right away in person
- You get a chance to really discuss with the coordinators and get the exact feel for where they are coming from.
- Easier to have their professional present that have past experience with waste issues
- Provides opportunity for discussion and to ask questions in a learning environment
- Ability to get away from the plant and focus on the topic. No interruptions.
- Listening to others in the group help to learn
- Face to face allows for instant answers to specific questions
- A person may inaccurately describe a situation leaving the regulators with concerns about our compliance whereas written (online) gives a person time to review what they said before submitting it.
- More info from trainers and other people in the class
- People need to be able to ask questions and be given real world examples of all the regulations.
- Meeting people is helpful, however, scheduling and the length of the course may be obstacles.
- Time saved by doing online training. Do not need to worry about scheduling etc.
- Personal preference, learning style.
- Face to Face is more effective.
- Much better forum to share information with other HWCC, promotes discussion and rapport with instructors.
- Can ask more questions.
- Can ask questions at any time.
- Better interaction.
- Questions answered directly from the regulators.
- Relationships improve teaching, online is so disconnected.
- We generate limited waste stream.
- People's minds drift online.
- The presentations are very interesting and the input from other coordinators is quite valuable.
- Online Training lacks interaction and ability to ask questions.
- Immediate answers to questions.
- Ability to ask questions and get answers.
- The office can be distracting for online training. Travel time can be a burden.
- Its more interactive, questions get answered faster.

- You get to hear a wide range of questions from other individuals of things you may not have asked about but may have been wondering about.
- I think you need a special skill set to be a good trainer...therefore online is sometimes better.
- Schedules to get into a face-to-face training are difficult.
- I comprehend much better in a classroom setting then over a computer screen.
- Face to face training allows for better interactions with the trainer. It also allows the trainee to experience issues and questions from other facilities.
- Just like getting out of office and hear stories of my peers.
- More personable.
- Online training allows trainees to be present at their facilities and can be done at the trainee's convenience.
- Much better learning environment
- We are able to put a name and face to an instructor when we need help.
- Ability to network with others. Ask questions of instructors and/or other attendees.
- That is how I learn.
- Not many people could /would finish the training sessions if they were not in a class.
- I like doing training online at my own pace. I don't like sitting in a classroom environment.
- To tell [you] the truth, you would miss [so] much by online training! There is so much to be gained by attending the class room instructions!! Truly you would as there are questions raised by other class members which I have not even thought about. Plus I am able to develop those relations with the attendees in my same industry but other industries too. I do not hesitate to call those individuals with my questions or concerns. I have developed relations where I have audited their HW program and they have returned the favor and audited my program!! Online training is certainly not the way to go!!
- More Interesting.
- Online training does not facilitate feedback appropriately.
- Questions and comments from other facilities helps make me more aware of different issues we don't have in our facility and helps open our eyes to different things.
- Focus and provides immediate feedback.
- Personal contact has greater impact over online use. It better personifies the agency.
- Online training can lead to some distractions, face to face you can interact with the instructor.
- Get more out of hands on training.
- I learn more and can ask questions face to face training.
- All of the course could be done online. Any questions could be addressed via telephone or email.
- Get more by being present, able to ask questions.
- Personal preference but why not both?
- Real time questions can be addressed and also hear what other people are faced with.
- I actually like to be "forced" to do annual training. All in our company expect it and are ready to do this almost as a civic duty. Like Jury duty, the boss cannot give anyone a bad time for going.
- In-person is always great, but for certain individuals it would be beneficial to be online.
- Easier to ask questions and follow-up.
- Ability to ask questions and build rapport with the instructor.

- It is always the little things that are missed with online training. And the little things are what gets us in trouble.
- Get to hear feedback, speak with others. More personal and engaging.
- instances arise when if unable to make a class the on-line training to keep someone from not being certified.
- The networking of a class setting.
- Classroom training forces people to leave their day to day operational function allowing full focus on the content of the class.
- Face to face training is always the preferred training method, but the annual training requirement has become very redundant.
- Questions and nuances can be addressed; opportunity for learning as opposed to memorizing; interaction with others enhances cooperative learning.
- A great deal of information and codes hard to follow online.
- Depends on delivery platform of on line system; many are time based rather than content based, which is a significant problem.
- Better relationships with the regulators.
- You are able to ask questions during in-class training.
- Interaction is immediate.
- It's personal.
- You have the opportunity to ask questions specific to your industry. Online training is so cookie cutter sometimes you don't have a chance to ask pertinent questions.
- Being able to ask questions applicable to specific needs.
- Convenience and there is not too much interaction.
- Don't feel we need the training.
- Ask questions, and hear other comments from class.
- Ability to ask questions and discuss issues with other participants.

**“Please provide any comments related to the effect of the HWCC program on your professional relationships with regulators or others”:**

- I have been extremely impressed with the level of knowledge and professionalism of the NHDES staff, particularly. Susan and Tim have developed relationships with the attendees over the years and are very approachable and helpful in finding solutions to whatever issues generators may be facing. I enjoy the class and hope that it continues.
- We have a very good relationship with NHDES. HWCC program didn't start it but has definitely fostered a better relationship and trust for both Veolia and NHDES.
- None
- I am better prepared to explain NH Hazardous Waste Rules to Corporate EHS managers audits as to why I run my Hazardous Waste Program than to how he thinks it should go.
- N/A
- This survey should probably go to someone in the facility you are asking about.

- I feel that I have many more resources to reach out to with any questions.
- I am 100% comfortable picking up the phone and calling any of the regulators in the HW division and without fear of having something bad come of it. I worked as a consultant in other New England states and that is not a feeling that is shared with state agencies outside of NH.
- We are educated waste managers following these many years of training and it provides us the feeling of pride in our efforts and achievements.
- I know I can call them, and have called them for advice.
- I have often worked with folks from DES (haz waste, water and air) and found the folks extremely helpful. The HWCC training provided a good introduction to regulators and started ongoing cooperative relationships.
- Very helpful so far.
- I came into the position without a lot of NH training and it has enabled me to effectively work with regulators, train staff and develop company programs.
- Better able to teach others and provide training at store level.
- I have been going to the HWCC certification since the beginning of the program, over the 13 years that I have attended the training has helped me grasp a full understanding of the requirements and how to handle special [situations]. Sue and Tim have done an amazing job conducting the training as well as building relationships with the industries I've worked in. I feel that having this program has drastically improved our compliance and understanding of our state and federal requirements.
- The New Hampshire HWCC Program takes the fear of government regulations away. The regulators are very easy to contact and work with.
- The HWCC Program has strengthened my relationship with regulators.
- My experience has been great, NH DES employees answer questions fast, are thorough with details when needed and they give me the impression they want to help, not punish a company for an employee asking questions to help stay in compliance
- EPA speaks very highly of the NH DES HWCC!
- Regulators have not been to my store.
- I like the course. It is well presented. The presenters are intent upon increasing the attendees' level of understanding and compliance.
- Communicate with state DES as needed. Contact info is provided and updated at every class.
- HWCC helps me to better understand hazardous waste regulations.
- Since I receive training I am better prepared to answer questions and comprehend RCRA rules and regulations better.
- Showed me they are there to help and not just regulate.
- It helps to know people face to face. It also builds a more personal relationship.
- I trust and share with HWCC employees. This helps me solve more complex problems using their suggestions.
- No comment.
- Easier to ask questions in personal training than calling - names with faces helps.
- It's a good program. Anytime you can facilitate conversation, growth and education it's a good thing.
- I enjoy the different individual modules for returnees.
- Helps grow the relationship with the inspectors.

- The required training has had no effect at all on my professional relationships with others nor on the likelihood of my contacting the regulators in the event of a problem.
- Great program, only drawback for our situation is that we have to go thru extensive training and all we do is recycle oil. The extra education is GOOD, but expensive and over-the-top for our situation.
- I believe we have a very healthy relationship with DES. We have talked to them over email and phone on questions that we have had. When I have dealt with a regulator, it has been constructive. They are just doing their jobs checking things.
- Sharing understanding with others within the industrial community.
- Inspectors seem to only be focused on revenue. People from HWCC seem to want to partner with business.
- I like how open NH is to companies and eager to assist.
- I feel more comfortable asking questions.
- Have a better understanding of the complexities and responsibilities of their positions
- HWCC has greatly increased contact time with and relationships with NHDES staff. Very knowledgeable and helpful folks.
- The regulators involved in the HWCC program are always very helpful in answering questions.
- A learning experience for care and protection of the environment.
- NHDES is always willing to help.
- The knowledge has made me more confident, but I have always felt I could ask questions of NHDES or our env carriers.
- It is nice to know that I can call either Sue or Tim, and they know who I am, and we can have an open discussion about hazardous waste rules. They are excellent [sources] of information.
- Since the inception of the HWCC program, I am less reluctant to contact agency staff to discuss a particular regulatory requirement of concern.
- At my previous job I had done a lot of work with the state of Massachusetts I feel I try to maintain the upmost professional relationships with any person.
- It has given me better knowledge to communicate with co-workers.
- It has helped make me more aware of the regulations that we need to follow and made communication within our facility improve on how to handle our waste.
- Don't have any interaction outside DOT.
- Awesome, They are not scary anymore.
- It was more a refresher course for me.
- We feel better positioned to ask questions and receive the appropriate guidance.
- Online training should be available for return HWC.
- The relationship has strengthened by attending this annual training.
- The State folks are always willing and available to field questions all year long. This program gives you the sense that you are working with "friend" and not regulators.
- Direct access to agency representatives during training is extremely valuable. Additionally, after meeting face to face and spending a day in training many feel more comfortable reaching out after training via email or other methods.
- We often call with questions and the answers are provided immediately. It is a great relationship. It is due to meeting the regulators on a face-to-face personal level.

- It places a face with the entity, over the years you know who is who and have a feel for how the State prefers things be [run].
- Regulators have more confidence that we are serious about compliance with the regulations.
- NHDES does a great job of helping people understand most of the codes, and [regulations] needed to be in compliance with the EPA. I was in the program for many years, but never felt totally confident that I fully understood every aspect of compliance.
- For people who are in the environmental field and have experience with the regulations, the annual certification course is too long. There should be an option for a shorter version, discussing changes to the regulations and a general question and answer period to update someone's certification.
- I have reached out to Tim P with questions etc.
- Because of the program, we are not afraid to contact NHDES with questions. We feel they are there to help us follow regulations.
- None.
- Have always tried to maintain professional relationships with regulatory agencies. The HWCC permits agency to get better view of how regulations are affecting regulated community, and challenges business face in understanding, meeting regulatory requirements.
- Trust.
- Absolutely comfortable with phoning regulators on questions.
- They do a great job!
- I can ask more detailed questions.
- Being able to talk to my Safety Kleen representative about our waste to keep us from becoming a generator.
- A professional relationship with regulators is necessary to get accurate interpretations of the regulations and find solution to specific issues.
- More comfortable in dealing with NHDES Waste Management Division.
- It is just plain easier to find them when there is a problem.
- More comfortable talking to those who would ultimately inspect us if need be. More confident in what we are doing.
- Building professional relationships with agencies is always important.
- Much more comfortable around the DES. They are there to help.
- I have used the waste hotline numerous times over the last 13 years. It is much easier to ask for information from people that you are familiar with.
- I know who to go to ask questions and where to find the answers.
- I feel more connected to the company as whole knowing full circle.
- Our relationship with regulators has not changed. There is a reluctance to contact them for fear of generating an audit.
- These programs give us training with regulators and others in our fields so we can build a network for help and support with issues.
- I have a better understanding of what needs to be done and (more importantly) why.
- Based on my relations with the NHDES HW, I feel very comfortable reaching out to the departments like air, oil, water and etc.

- Getting to know the regulators on a personal basis removes the stigma that they are 'regulators' and are real people. There is a mutual understanding that both groups want to keep and improve our environment.
- NH regulators are well informed, easy to reach, and very helpful
- When you meet the trainers and you have questions down the road it is nice to talk to someone you have meet.
- Understand more of what they are talking about after the training.
- Good program.
- If I had a question I wouldn't hesitate to call one of the NHDES regulators to get an answer.
- I know the faces (or at least two of them) and my phone calls are more cordial than before the program began.
- Prior to program viewed regulators as adversaries. After closer to allies in negotiating the Fed rules.
- I found it very easy to ask DES any questions after meeting them and going through this program.
- This training has provided an avenue for discussion and questioning with Regulators.
- Has helped to maintain a continued openness and team focused relationship to maintaining compliance.
- We have a big company; internally we have become assets to our company by gaining useful knowledge.
- It is great to get to know the instructors at NHDES.
- Face to face training is beneficial for getting to know who the 'regulators' are and developing relationships. However, we have always had good working relationships with EPA, DES and OSHA well before the HWC certification.
- The classroom training is very important for the first year or two, but I think annual refresher could be done on-line, maybe with a classroom refresher every 5 years or so.
- I was very pleased with the program and found it extremely valuable both in my profession and home. The instructors were helpful, knowledgeable, and always available for questions and problem solving.
- HUGE- I have been a manager in several states and the NH HWCC is one I often speak of - their public relations are second to none.
- Open dialogue.
- My industry works very closely with many NH hazardous waste generators as well as NHDES. This training is beneficial for both our customers (by making them more knowledgeable) as well as Veolia by increasing awareness of regulations throughout our customer base. Overall this training opens up the lines of communication as well as instills a baseline of knowledge for people working in this field. We greatly appreciate this training and have been hoping other states will start something similar.
- Feel like can more openly communicate with regulators and intentions are more transparent.
- None, all has stayed the same.
- More familiar with staff at the NHDES.

**“Please provide any comments related to changes in your facility or organization's regulatory compliance activities as a result of the HWCC program”:**

- No changes just a better understanding of regulations and compliance.
- Improved.
- Secondary Containment set up for indoor storage.
- N/A
- Send this survey to someone involved in the facility in question.
- Have more trainings and everyone seems to be more aware of any potentially hazardous material.
- We are conducting all of our activities by the book.
- Again, we prohibit material that may become a hazardous waste from the site.
- We enhanced waste determination practices, self-inspections, and waste handling employee training.
- Knowing the regulations more intimately has increased our compliance with the regulations and changed our behavior while generating, storing, inspecting, etc.
- <Redacted Company Name> in Lebanon now has a Hazardous Waste Coordinator and will be doing regular shipments of waste.
- Now contract for medication removal, however we have not even generated a box yet.
- Labeling Organization of required documents Spill control Updated Contingency Plan.
- Better trained on what to look for.
- Pollution prevention, improved awareness and compliance.
- More aware of finding possible violations and it has made it easier to correct and act to prevent violations.
- Haven't been inspected by the state as of yet, only the town but their inspection was not waste related but supposedly for wastewater neutralization.
- None.
- We send several individuals to the training. Therefore, there are many who can conduct daily/routine rounds to assure compliance.
- We take notes on any gaps in our program while in training and make changes to ensure we're in compliance.
- More organized.
- It's easier to follow the rules when you know and understand the rules. Handling haz. waste, training, self-inspections, and waste determinations have all improved at this facility.
- We are much more aware of the regulations and what is needed to stay in compliance.
- Much improved.
- Training has improved dramatically.
- No comment.
- Recycling is looked at on a regular basis.
- The everyday handlers 'owned' the program much more - they were far more invested in managing their surroundings, making sure things were in order.
- Better at HW determination.

- Not applicable. We have not been a generator in 7-8 years.
- Overall improvement.
- No changes.
- Overall awareness is much higher on many compliance issues. I believe it created a positive and productive compliance awareness atmosphere.
- I believe we are strongly working on this and have reduced areas of concern.
- The professional people in our organization care about and do a good job of being compliant. There are a great many hourly workers in the country who just don't care. ie, closing boxes after adding lamps, closing containers after adding waste. These get caught on inspections and make it look like the management of the company does not care.
- Labeling has improved.
- Improved signage, communication, [and] contingency plan.
- More scheduled lab pack activity. Better inspection plan.
- Increased quantity and frequency of outreach/oversight to satellite generators.
- We are more compliant from knowledge thru the HWCC training after audits and inspections.
- Able to become a SQG.
- Because of attending the HWCC program, I have a better RCRA contingency plan, written a better training manual, and with a better understanding of the rules, I can better explain what we need to do to keep in compliance.
- I came to my job after being an environmental driller. The knowledge I have received from training has been extremely helpful.
- We have implemented a contingency plan, created a used oil program & increased training for our waste handlers.
- We have created a Waste Oil Program, Contingency Plan, and increased waste handler knowledge through a revised training program.
- There were no violations found during the EPA Hazardous waste inspection, just some recommendations.
- We have a complete HW program now.
- Better documentation.
- Creation of Training Program Binder to document what type of training was required at the Facility.
- Waste minimization programs enhanced. Training enhanced, we now recycle much more waste and we self-transport.
- There was an unannounced and unscheduled hazardous waste program inspection performed by EPA in June 2014; the inspection went very well and no notice of violation was issued.
- We conduct all the required self-inspections, we have a program for handling manifests and we have trained personnel.
- Improved disposal of waste.
- Improved compliance due to a better understanding of the rules and regulations, especially state of NH rules and regulations.
- Employee training and record keeping greatly increased.
- We're constantly trying to improve our handling and processing of hazardous waste due to the HWCC program.

- Some key points at the program are helpful. In addition, the instructors provide information to each participant of the status of his/her facility's permit.
- No findings from this inspection, whereas during the inspection before this there were several.
- We streamlined and standardized our hazardous waste labeling program. We've modified satellite accumulation area practices.
- I'm no longer employed by <Redacted Company Name>.
- Attending HWCC helps keep the 3 coordinators at this company updated as to best practices and regulatory changes.
- Continue improvement.
- N/A
- Keeping our waste organized.
- No findings on inspection as we are trained annually on the requirements.
- Satellite storage issue corrected.
- When I was hired I implemented some of what I learned as a HW Coordinator. I had removed hazardous waste that was being stored on site and came up with a storage room for universal waste.
- We are better at documentation and ensuring proper storage of waste streams.
- I believe there are small things that we have done that help to keep us in compliance, learn something new at every training session.
- Before we had no clue what the regulations were.
- Over the first few years of taking part in the HWCC program many changes were made to bring us up to compliance. Things have definitely improved.
- Even though we are a small quantity generator, we hold ourselves to a full quantity status.
- The training provided by the HWCC has clarified what inspector will be looking for during inspections and how to meet those requirements.
- 4 years ago we had none in charge of our waste. And no HWC trained personnel. Now we have many folks certified and have controls in place. This is all due to me taking my first class with NHDES. Since then I have taken many different modules. We would be in a bad spot if not for DES HWC training.
- Greater awareness of what constitutes hazardous waste, its determination, proper storage, handling and disposal.
- The HWCC program helps to show, and to teach.
- many, many changes have been made over the years. it seems every year we make a change or update something due to what we learn in class.
- As mentioned earlier, we have changed many of our practices as a result of regular attendance to HWCC courses.
- Awareness has increased.
- We are much more aware of what's required, and relay more to our employees, asking for their assistance.
- I have made many changes when returning from a training class.
- We strive for stability in personnel assigned and qualified to do this work. We have decided to upgrade the position in order to improve retention and qualifications. New coordinator will hopefully bring that stability.

- Moved our corrosive waste to area that is easier to monitor- and increased our labeling of both hazardous and nonhazardous waste streams.
- Continued awareness is key, use of our Compliance Calendar to follow and track Regulatory activities. IE: Audits, Inspections.
- No significant changes. However, increased compliance due to annual HWC training for 10 of our employees who work with and manage our waste.
- Can't respond currently.
- None.

**“Please provide any additional comments related to changes in facility costs as a result of the HWCC program”:**

- The only cost increase is the HWCC training.
- None.
- Corporate has this information.
- The answer in 32 is as close to an NA as I can find. I do not have this information to share.
- We are getting a whole new facility. all modernized and updated.
- Money well spent.
- This is a new (3 years old) facility that was first registered as a SQG. After the HWCC training we realized that with a little bit of effort we could be a non-generator
- Costs were often not realized annually but rather for incremental improvements such as for additional spill containment equipment or waste determination analytical work for new but routine waste streams.
- None.
- We send out non-hazardous wastes as we want to do the right thing with all wastes and handle and dispose of them the most environmentally friendly way as possible.
- Hazardous waste storage area size had to be increased.
- I don't see the cost [numbers] but there was an increase due to wastewater neutralization systems being upgraded.
- No additional comments.
- Q 32 above is really N/A but you did not give this as an option. The costs we incur for HW activities are not related to the HWCC /not sure why this survey thinks it is.
- ALARA programs have helped us reduce some costs.
- Answer for question 32 is unknown. Cost cannot be calculated at store level.
- Additional Recycling efforts have made a difference.
- Costs increasing are not due to the HWCC program. Handling and disposing of the HW has been the largest cost increase.
- We are no longer a Generator, questions based on when we were a generator back in 2009.
- Costs aside, the program raised awareness-- and I believe ultimately, made us better stewards of the environment, and a better facility.
- There were actually no changes as a result of the HWCC program but the survey does not list "No change" as a response and does not allow you to proceed until one of the responses is selected.

- Not a lot of additional cost but additional attention does have additional cost.
- Waste determinations reduced what was going out as hazardous.
- No change in costs. Change in program practices.
- I do not have cost information.
- We have added additional spill containment supplies we no longer self-transport universal waste to local companies & we have increase the hours that our employees spend in training.
- Added spill containment supplies, added cost for universal waste transportation and disposal. We no longer self-transport to local companies for oil and lead acid batteries. Increased cost of training time for employees.
- I don't have insight into these items.
- We have minimal hazardous waste. Mostly very small quantities of various chemicals purchased by R&D.
- Unsure of answer to #32.
- There was little change in cost however the hazardous waste management program at the facility has improved.
- We have used templates for program development and have used State HWCC contacts to assist in the development through Q&A.
- Hard to track... we do not track improvements based on the training... many avenues lead to improvements not just the state training.
- N/A
- None.
- Recycling, waste elimination have decreased costs.
- Costs to improve our waste management have been minimal.
- Our Public Works Department encumbers the cost.
- Not aware of these charges.
- Hard to give cost as nothing was tracked very well in the past. Waste reduction have in the past 4 years have resulted in [approximately] \$40000 savings. Past 2 years a 32% reductions in costs. Hard to attribute cost savings directly to HWC training but fair to say it had some influence!
- As this facility's HWCC program has been established for more than a decade, currently the greatest increase in costs is due to the increasing fees for attending the training.
- The increase is associated with proper handling and disposal of the HW and non HW. Plus proper HW training of the staff who handle HW and other waste streams.
- Many of the cost increases were due to increased shipping and training costs and had no correlation with the HWCC.
- Program costs increase because of better in-depth training in plant.
- N/A; we've had a HWCC program in place since we started.
- From above comment, we have upgraded the coordinator position and will pay a higher salary but will get benefits beyond HW compliance (Wastewater, air, storm water as well as future safety compliance and program initiatives).
- Limited involvements with the financial side of things.
- Our costs changed when we renegotiated our contract with our vendor.
- Annual fee for training.

## **Appendix C: Complete Regression Results**

Contents of this appendix:

Table C1: Codebook for variables used in regressions

Table C2: First pass regression (OLS)

Table C3: First pass regression (ordered logit)

Table C4: First pass regression (ordered probit)

Table C5: OLS by waste type

Table C6: Ordered logit by waste type

Table C7: Ordered probit by waste type

Table C8: OLS by sector

Table C9: Ordered logit by sector

Table C10: Ordered probit by sector

Table C11: Facility cost categories (OLS)

Table C12: Facility cost categories (ordered probit)

Table C13: Facility cost categories (ordered logit)

Table C14: Heckman sample selection model coefficients

Table C15: Sample selection ordered probit (“Heckoprobit”) model coefficients

Table C1: Codebook for variables used in regressions

<u>Variable name</u>	<u>Corresponding survey question</u>	<u>Definition</u>
face_to_face	Please rate the following: Face-to-face training is preferable to online training	0=Strongly Disagree; 1=Somewhat Disagree, 2=Somewhat Agree, 3=Strongly Agree
probability_violation	Do you believe the probability of having a violation found during an inspection increased or decreased following HWCC training?	0=Decreased; 1=Remained the Same; 2=Increased
facility_cost_approximation	Please provide an approximation of the total annual changes in costs to your facility as a result of the HWCC program:	0=Decreased by more than \$100,000 per year; 1=Decreased by between \$10,000 and \$100,000 per year; 2=Decreased by between \$1,000 and \$10,000 per year; 3=Decreased by less than \$1,000 per year; 4=Increased by less than \$1,000 per year; 5=Increased by between \$1,000 and \$10,000 per year; 6=Increased by between \$10,000 and \$100,000 per year; 7=Increased by more than \$100,000 per year
reach_out_rate	Following HWCC program completion: We are more likely to reach out to regulators if we have questions about compliance regarding any hazardous waste generation or management issues.	0=Strongly Disagree; 1=Somewhat Disagree, 2=Somewhat Agree, 3=Strongly Agree
rate_employee_knowledge	Please rate the following: Employees at our facility have improved knowledge of effective hazardous waste management procedures following HWCC	0=Strongly Disagree; 1=Somewhat Disagree, 2=Somewhat Agree, 3=Strongly Agree
generator_size_response	Has your generator size changed following completion of the HWCC program?	0=Decreased; 1=Remained the Same; 2=Increased
facility_cost_contingency	Please state whether your facility's costs increased or decreased in each of the following areas since the inception of the HWCC program: Contingency plan	0=Costs decreased; 1=No change; 2=Costs increased
facility_cost_determination	Please state whether your facility's costs increased or decreased in each of the following areas since the inception of the HWCC program: Hazardous waste determination	0=Costs decreased; 1=No change; 2=Costs increased

facility_cost_train	Please state whether your facility's costs increased or decreased in each of the following areas since the inception of the HWCC program: Training	0=Costs decreased; 1=No change; 2=Costs increased
facility_cost_transport	Please state whether your facility's costs increased or decreased in each of the following areas since the inception of the HWCC program: Transportation of hazardous waste	0=Costs decreased; 1=No change; 2=Costs increased
facility_cost_fine	Please state whether your facility's costs increased or decreased in each of the following areas since the inception of the HWCC program: Chance of fine due to violation during inspection	0=Costs decreased; 1=No change; 2=Costs increased
facility_cost_storage	Please state whether your facility's costs increased or decreased in each of the following areas since the inception of the HWCC program: Hazardous waste storage	0=Costs decreased; 1=No change; 2=Costs increased
facility_cost_emergency	Please state whether your facility's costs increased or decreased in each of the following areas since the inception of the HWCC program: Emergency preparedness	0=Costs decreased; 1=No change; 2=Costs increased
generator_status	None; matched from NHDES and EPA using email and RCRA ID	0=Not a generator; 1=SQG(CESQG); 2=FQG2(SQG); 3=FQG1(LQG)
years_employed_n	How long have you been employed in your current position (years/months)?	Number of years employed at current facility, rounded to nearest integer
years_certified	How long have you been certified by the HWCC program?	Number of years certified by HWCC, rounded to nearest integer
NH_yes_no	Does your company/organization operate in other states besides New Hampshire?	=1 if company operates outside NH, =0 otherwise
employees_count	Approximate Number of Employees in Facility	Approximate number of total employees at respondent's facility
Waste_Types_P	Types and Quantities of Hazardous Waste Generated in 2014?	Annual quantity of P-listed waste generated in pounds

Waste_Types_U	Types and Quantities of Hazardous Waste Generated in 2014?	Annual quantity of U-listed waste generated in pounds
Waste_Types_F	Types and Quantities of Hazardous Waste Generated in 2014?	Annual quantity of F-listed waste generated in pounds
Waste_Types_K	Types and Quantities of Hazardous Waste Generated in 2014?	Annual quantity of K-listed waste generated in pounds
Waste_Types_Ignitable	Types and Quantities of Hazardous Waste Generated in 2014?	Annual quantity of characteristically ignitable waste generated in pounds
Waste_Types_Corrosive	Types and Quantities of Hazardous Waste Generated in 2014?	Annual quantity of characteristically corrosive waste generated in pounds
Waste_Types_Reactive	Types and Quantities of Hazardous Waste Generated in 2014?	Annual quantity of characteristically reactive waste generated in pounds
Waste_Types_Toxic	Types and Quantities of Hazardous Waste Generated in 2014?	Annual quantity of characteristically toxic waste generated in pounds
naics_type	None; matched from NHDES and EPA using email and RCRA ID	Classification based on 2-digit NAICS prefix assigned to facility; classified on RCRA ID if available and manually otherwise
Auto	None; matched from NHDES and EPA using email and RCRA ID	=1 if naics_type=="auto", =0 otherwise
construction	None; matched from NHDES and EPA using email and RCRA ID	=1 if naics_type=="construction", =0 otherwise
Educ	None; matched from NHDES and EPA using email and RCRA ID	=1 if naics_type=="educ", =0 otherwise
Enviro	None; matched from NHDES and EPA using email and RCRA ID	=1 if naics_type=="enviro", =0 otherwise
Gov	None; matched from NHDES and EPA using email and RCRA ID	=1 if naics_type=="gov", =0 otherwise
health_social	None; matched from NHDES and EPA using email and RCRA ID	=1 if naics_type=="health_social", =0 otherwise

laundry_photo	None; matched from NHDES and EPA using email and RCRA ID	=1 if naics_type=="laundry_photo", =0 otherwise
manufacturing	None; matched from NHDES and EPA using email and RCRA ID	=1 if naics_type=="manufacturing", =0 otherwise
Mil	None; matched from NHDES and EPA using email and RCRA ID	=1 if naics_type=="mil", =0 otherwise
Mining	None; matched from NHDES and EPA using email and RCRA ID	=1 if naics_type=="mining", =0 otherwise
Other	None; matched from NHDES and EPA using email and RCRA ID	=1 if naics_type=="other", =0 otherwise
Unknown	None; matched from NHDES and EPA using email and RCRA ID	=1 if naics_type=="unknown", =0 otherwise
retail_wholesale	None; matched from NHDES and EPA using email and RCRA ID	=1 if naics_type=="retail_wholesale", =0 otherwise
scientific_technical	None; matched from NHDES and EPA using email and RCRA ID	=1 if naics_type=="scientific_technical", =0 otherwise
transport_logistics	None; matched from NHDES and EPA using email and RCRA ID	=1 if naics_type=="transport_logistics", =0 otherwise
Utilities	None; matched from NHDES and EPA using email and RCRA ID	=1 if naics_type=="utilities", =0 otherwise

Table C2: First pass OLS regressions

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	face_to_face	probability _violation	facility_cost_a pproximation	reach_out_rate	rate_employee _knowledge	generator_siz e_response
generator_status	-0.0394 (0.0521)	0.0103 (0.0368)	0.119 (0.120)	-0.00819 (0.0446)	0.0454 (0.0406)	0.154*** (0.0359)
years_employed_n	0.00183 (0.00504)	-0.00518 (0.00339)	0.0153 (0.0103)	0.000339 (0.00437)	-0.000602 (0.00473)	0.00612 (0.00416)
years_certified	0.0145 (0.0132)	-0.00526 (0.00892)	-0.0216 (0.0252)	0.000836 (0.0114)	0.00841 (0.0110)	-0.0213** (0.00826)
NH_yes_no	0.158 (0.102)	0.0838 (0.0736)	-0.109 (0.204)	-0.0227 (0.0838)	-0.00771 (0.0792)	-0.0270 (0.0649)
employees_count	-1.62e-05 (9.00e-05)	-8.62e-06 (5.25e-05)	-9.91e-05 (0.000219)	2.40e-05 (5.28e-05)	-0.000115** (5.61e-05)	-7.39e-06 (4.24e-05)
Constant	2.445*** (0.149)	0.282*** (0.0981)	3.704*** (0.237)	2.638*** (0.112)	2.520*** (0.121)	0.674*** (0.0870)
Observations	226	208	198	224	228	223
R-squared	0.019	0.024	0.015	0.001	0.016	0.109

Robust standard errors in parentheses

\*\*\* p&lt;0.01, \*\*

p&lt;0.05, \* p&lt;0.1

Table C3: First pass ordered logit regressions

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	face_to_face mfx dydx	probability_ violation mfx dydx	facility_cost_a pproximation mfx dydx	reach_out _rate mfx dydx	rate_employee_ knowledge mfx dydx	generator_size _response mfx dydx
generator_status	-0.0182 (0.0375)	0.00584 (0.0272)	0.0267 (0.0241)	0.0197 (0.0371)	0.0495 (0.0370)	0.0349*** (0.0110)
years_employed_n	0.000666 (0.00391)	-0.00319 (0.00308)	0.00278 (0.00240)	-0.000349 (0.00380)	2.75e-05 (0.00390)	0.00129 (0.000834)
years_certified	0.00927 (0.00904)	-0.00311 (0.00691)	-0.00402 (0.00566)	0.00700 (0.00891)	0.00824 (0.00904)	-0.00473** (0.00205)
NH_yes_no	0.0904 (0.0675)	0.0460 (0.0495)	-0.0284 (0.0428)	-0.00571 (0.0661)	-0.0189 (0.0667)	-0.00541 (0.0137)
employees_count	-1.65e-05 (5.59e-05)	-2.22e-05 (5.03e-05)	-1.61e-05 (4.30e-05)	2.42e-06 (5.88e-05)	-0.000113** (5.30e-05)	-1.53e-06 (1.23e-05)
Observations	226	208	198	224	228	223

Standard errors  
in parentheses

\*\*\* p<0.01, \*\* p<0.05, \*  
p<0.1

Table C4: First pass ordered probit regressions

VARIABLES	(1) face_to_face mfx dydx	(2) probability _violation mfx dydx	(3) facility_cost_a pproximation mfx dydx	(4) reach_out _rate mfx dydx	(5) rate_employee _knowledge mfx dydx	(6) generator_size _response mfx dydx
generator_status	-0.0239 (0.0363)	0.00598 (0.0258)	0.0245 (0.0199)	0.00638 (0.0365)	0.0422 (0.0363)	0.0613*** (0.0216)
years_employed_n	0.00106 (0.00381)	-0.00321 (0.00287)	0.00218 (0.00205)	-5.95e-05 (0.00374)	-0.000248 (0.00369)	0.00251 (0.00158)
years_certified	0.00943 (0.00870)	-0.00296 (0.00649)	-0.00320 (0.00485)	0.00375 (0.00860)	0.00733 (0.00872)	-0.00855** (0.00407)
NH_yes_no	0.0979 (0.0646)	0.0485 (0.0460)	-0.0186 (0.0355)	-0.0115 (0.0639)	-0.0126 (0.0648)	-0.0119 (0.0236)
employees_count	-1.34e-05 (5.33e-05)	-1.25e-05 (4.24e-05)	-8.29e-06 (3.07e-05)	1.42e-05 (5.93e-05)	-9.81e-05* (5.23e-05)	-1.48e-06 (2.16e-05)
Observations	226	208	198	224	228	223

Standard errors  
in parentheses  
\*\*\* p<0.01, \*\*  
p<0.05, \* p<0.1

Table C5: OLS regressions by waste type

	(7)	(8)	(9)	(10)	(11)	(12)
VARIABLES	face_to_face	probability _violation	facility_cost_a pproximation	reach_out_rate	rate_employe e_knowledge	generator_size_ response
Waste_Types_P	0.000185 (0.00110)	-0.00163* (0.000836)	5.38e-05 (0.00146)	0.00123 (0.000938)	-0.00762*** (0.000897)	-0.00129*** (0.000459)
Waste_Types_U	0.000149 (0.000586)	8.59e-05 (0.000382)	0.000757* (0.000411)	-0.000570 (0.000834)	-0.000204 (0.000604)	-0.000345 (0.000259)
Waste_Types_F	3.02e-07 (4.07e-06)	-4.57e-06 (3.20e-06)	-1.17e-05** (4.95e-06)	3.16e-07 (7.59e-06)	3.23e-06 (2.62e-06)	-3.51e-06 (3.88e-06)
Waste_Types_K	-0.710*** (0.165)	0.507*** (0.168)	2.441*** (0.361)	0.199 (0.137)	0.326* (0.165)	0.772*** (0.100)
Waste_Types_Ignitable	-2.91e-06 (2.21e-06)	-1.32e-06 (1.36e-06)	-2.26e-06 (4.88e-06)	-1.14e-06 (2.70e-06)	8.01e-07 (1.59e-06)	2.89e-06 (4.29e-06)
Waste_Types_Corrosive	2.69e-06 (3.62e-06)	-7.22e-06* (4.26e-06)	3.84e-06 (1.98e-05)	-4.08e-06 (6.37e-06)	-7.30e-08 (5.31e-06)	-2.29e-06 (4.24e-06)
Waste_Types_Reactive	-0.000166 (0.000144)	0.000135 (0.000121)	0.000654*** (0.000154)	-6.22e-05 (0.000291)	-0.000249** (9.77e-05)	9.09e-05 (0.000110)
Waste_Types_Toxic	-2.81e-05*** (8.91e-06)	-5.44e-06 (4.44e-06)	3.25e-05 (2.09e-05)	-9.55e-06 (1.06e-05)	-6.43e-07 (1.13e-05)	-5.06e-06 (4.94e-06)
Observations	71	68	66	71	71	69
R-squared	0.175	0.151	0.238	0.077	0.203	0.338

Robust standard errors in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \*

p&lt;0.1

Table C6: Ordered logit regressions by waste type

VARIABLES	(7) face_to_face mfx dydx	(8) probability_ violation mfx dydx	(9) facility_cost_a pproximation mfx dydx	(10) reach_out_ rate mfx dydx	(11) rate_employee _knowledge mfx dydx	(12) generator_size_ response mfx dydx
Waste_Types_P	0.00115 (0.00415)	-3.36e-08 (8.22e-07)	-0.000103 (0.00378)	0.0236 (0.807)	-0.00278 (0.0316)	-3.36e-05 (0.0885)
Waste_Types_U	0.000215 (0.000581)	5.60e-09 (1.35e-07)	0.000262 (0.00893)	-0.000567 (0.0194)	-0.000210 (0.00242)	-1.03e-05 (0.0271)
Waste_Types_F	1.05e-07 (3.36e-06)	-9.64e-11 (2.34e-09)	-3.03e-06 (0.000104)	-1.50e-06 (5.13e-05)	9.41e-06 (0.000107)	-1.23e-07 (0.000324)
Waste_Types_K	-0.484 (0.312)	4.14e-07 (7.35e-06)	<b>-0.236***</b> (0.0551)	<b>0.189*</b> (0.105)	<b>0.220***</b> (0.0796)	<b>-0.921***</b> (0.0401)
Waste_Types_Ignitable	-1.98e-06 (1.84e-06)	-0 (4.03e-10)	-6.71e-07 (2.30e-05)	-3.42e-07 (1.18e-05)	6.99e-06 (7.99e-05)	1.20e-07 (0.000315)
Waste_Types_Corrosive	9.55e-06 (1.32e-05)	-3.10e-09 (7.10e-08)	2.21e-06 (7.55e-05)	-2.75e-06 (9.43e-05)	-6.75e-07 (9.07e-06)	-3.58e-08 (9.43e-05)
Waste_Types_Reactive	-0.000131 (0.000119)	5.28e-09 (1.24e-07)	0.000186 (0.00634)	2.70e-05 (0.000929)	-0.000355 (0.00404)	3.12e-06 (0.00822)
Waste_Types_Toxic	<b>-1.65e-05**</b> (7.81e-06)	-0 (1.49e-10)	9.83e-06 (0.000335)	-6.00e-06 (0.000206)	-6.21e-06 (7.13e-05)	-1.75e-07 (0.000460)
Observations	71	68	66	71	71	69

Standard errors in  
parentheses

\*\*\* p<0.01, \*\*

p<0.05, \* p<0.1

Table C7: Ordered probit regressions by waste type

VARIABLES	(1) face_to_face mfx dydx	(2) probability _violation mfx dydx	(3) facility_cost_a pproximation mfx dydx	(4) reach_out_ rate mfx dydx	(5) rate_employee _knowledge mfx dydx	(6) generator_size _response mfx dydx
Waste_Types_P	0.00119 (0.00380)	0 (0)	-3.42e-05 (0.00135)	0.0145 (0.0483)	-0.00270 (2.196)	-0.000112 (0.0126)
Waste_Types_U	8.35e-05 (0.000474)	0 (0)	0.000194 (0.000271)	-0.000609 (0.00189)	-0.000218 (0.178)	-3.40e-05 (0.00383)
Waste_Types_F	1.59e-07 (3.57e-06)	0 (0)	-2.76e-06 (2.43e-06)	-4.85e-07 (3.30e-06)	9.44e-06 (0.00768)	-3.75e-07 (4.23e-05)
Waste_Types_K	-0.464 (0.355)	0 (0)	-0.245*** (0.0551)	0.249*** (0.0920)	0.239*** (0.0736)	-0.923*** (0.0584)
Waste_Types_Ignitable	-1.95e-06 (1.91e-06)	0 (0)	-2.58e-07 (1.36e-06)	-8.59e-07 (3.33e-06)	5.92e-06 (0.00482)	3.72e-07 (4.19e-05)
Waste_Types_Corrosive	8.59e-06 (1.21e-05)	0 (0)	1.90e-06 (3.50e-06)	-3.27e-06 (1.10e-05)	-6.22e-07 (0.000507)	-1.09e-07 (1.23e-05)
Waste_Types_Reactive	-0.000129 (0.000126)	0 (0)	0.000159 (9.68e-05)	-2.91e-05 (0.000138)	-0.000364 (0.296)	9.73e-06 (0.00110)
Waste_Types_Toxic	-1.68e-05** (7.94e-06)	0 (0)	7.54e-06 (6.05e-06)	-7.65e-06 (2.45e-05)	-5.57e-06 (0.00453)	-5.36e-07 (6.04e-05)
Observations	71	68	66	71	71	69

Standard errors

in parentheses

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \*

p&lt;0.1

Table C8: OLS regressions by sector

VARIABLES	(1) face_to_face	(2) probability _violation	(3) facility_cost_a pproximation	(4) reach_out_rate	(5) rate_employee _knowledge	(6) generator_size _response
construction	-0.248 (0.592)	0.319 (0.335)	0.130 (0.816)	-0.246 (0.292)	0.0485 (0.279)	0.143 (0.115)
Educ	-0.0661 (0.187)	-0.183** (0.0741)	-0.0291 (0.419)	0.200 (0.153)	0.199 (0.160)	0.0603 (0.109)
Enviro	0.206 (0.169)	-0.118 (0.154)	0.215 (0.289)	0.247* (0.148)	0.0485 (0.177)	-0.242 (0.148)
Gov	-0.265 (0.261)	-0.232*** (0.0767)	-1.089*** (0.335)	-0.213 (0.297)	-0.211 (0.290)	-0.163 (0.195)
health_social	-0.470 (0.361)	0.222 (0.212)	0.628 (0.388)	0.320** (0.159)	-0.0473 (0.318)	0.200 (0.202)
laundry_photo	-0.367 (0.288)	0.0780 (0.250)	-0.183 (0.725)	0.0735 (0.263)	-0.305 (0.244)	0.311 (0.344)
Mil	0.397*** (0.0821)	-0.271*** (0.0778)	0.186 (0.682)	0.222 (0.192)	0.220 (0.194)	-0.519*** (0.183)
Mining	-1.692*** (0.103)	-0.382*** (0.0967)	0.308 (0.241)	-0.612*** (0.0851)	-0.593*** (0.0939)	0.223*** (0.0695)
Unknown	-0.215 (0.350)	-0.224* (0.133)	0.693** (0.293)	0.422*** (0.0763)	-0.581 (0.777)	0.357*** (0.0961)
retail_wholesale	-0.114 (0.171)	0.0828 (0.154)	0.0699 (0.360)	-0.343** (0.173)	-0.248 (0.200)	-0.115 (0.102)
scientific_technical	-0.479 (0.346)	0.136 (0.205)	-0.261 (0.520)	0.411*** (0.0620)	0.415*** (0.0673)	-0.00379 (0.113)
transport_logistics	0.266*** (0.0785)	-0.274*** (0.0750)	-0.400 (0.326)	0.0740 (0.294)	0.0617 (0.281)	-0.0620 (0.171)
Utilities	-0.283 (0.267)	-0.104 (0.131)	-0.295 (0.417)	0.000577 (0.249)	0.0132 (0.243)	-0.309** (0.137)
Constant	2.574*** (0.145)	0.306** (0.121)	3.726*** (0.288)	2.555*** (0.126)	2.471*** (0.132)	0.685*** (0.0987)
Observations	223	205	195	221	225	220
R-squared	0.107	0.070	0.045	0.075	0.080	0.194

Robust standard  
errors in  
parentheses  
\*\*\* p<0.01, \*\*  
p<0.05, \* p<0.1

Table C9: Ordered logit regressions by sector

VARIABLES	(1) face_to_face mfx dydx	(2) probability_ violation mfx dydx	(3) facility_cost_a pproximation mfx dydx	(4) reach_out_ rate mfx dydx	(5) rate_employee _knowledge mfx dydx	(6) generator_size_ response mfx dydx
employees_count	2.79e-05 (0.000327)	-8.65e-06 (0.000794)	-1.67e-05 (5.52e-05)	-4.27e-05 (0.00139)	-0.000108 (0.00117)	-2.96e-05 (2.96e-05)
construction	-0.0774 (0.815)	0.0925 (7.347)	0.0137 (0.213)	-0.178 (4.218)	0.0275 (0.374)	0.0233 (0.0337)
educ	-0.0187 (0.246)	-0.0869 (5.711)	-0.0152 (0.0992)	0.0964 (3.554)	0.138 (1.832)	0.0209 (0.0295)
enviro	0.137 (1.977)	-0.0155 (1.452)	0.0194 (0.104)	0.116 (4.426)	0.0320 (0.392)	-0.191 (0.185)
gov	-0.198 (1.445)	-0.0475 (4.264)	<b>-0.194**</b> (0.0787)	-0.144 (3.662)	-0.136 (1.141)	-0.0805 (0.213)
health_social	-0.233 (1.594)	0.0605 (5.115)	0.102 (0.0945)	0.146 (5.655)	0.0872 (1.085)	0.0131 (0.0593)
laundry_photo	-0.283 (1.525)	0.0269 (2.381)	-0.0795 (0.147)	0.00413 (0.230)	-0.229 (1.473)	-0.0423 (0.156)
mil	0.307 (2.942)	-0.0512 (4.473)	0.0533 (0.151)	0.106 (4.007)	0.138 (1.858)	<b>-0.502**</b> (0.240)
mining	-0.685 (2.569)	-0.0414 (3.923)	0.0334 (0.251)	-0.417 (4.720)	-0.447 (0.930)	-0.00608 (0.243)
unknown	-0.163 (1.333)	-0.0443 (4.112)	0.124 (0.148)	0.206 (7.602)	-0.383 (1.305)	-0.118 (0.541)
retail_wholesale	-0.0773 (0.784)	0.0236 (2.108)	-0.00379 (0.0876)	-0.235 (5.105)	-0.139 (1.171)	-0.0699 (0.0926)
scientific_technical	-0.248 (1.578)	0.0351 (3.077)	-0.0593 (0.106)	0.300 (4.616)	<b>0.349***</b> (0.0340)	-0.00491 (0.0690)
transport_logistics	0.280 (3.575)	-0.0477 (4.277)	-0.0976 (0.124)	0.0308 (1.064)	0.0551 (0.683)	-0.0105 (0.125)
utilities	-0.117 (1.083)	-0.0127 (1.192)	-0.0706 (0.0812)	0.0464 (1.610)	0.122 (1.584)	<b>-0.267*</b> (0.150)
Observations	223	205	195	221	225	220

Standard errors

in parentheses

\*\*\* p&lt;0.01, \*\*

p&lt;0.05, \* p&lt;0.1

Table C10: Ordered probit regressions by sector

VARIABLES	(1) face_to_face mfx dydx	(2) probability _violation mfx dydx	(3) facility_cost_a pproximation mfx dydx	(4) reach_out _rate mfx dydx	(5) rate_employee _knowledge mfx dydx	(6) generator_size _response mfx dydx
construction	-0.124 (0.344)	0.148 (2.402)	0.0249 (0.173)	-0.175 (0.481)	0.0391 (0.265)	0.0248 (0.0328)
educ	-0.0343 (0.165)	-0.134 (3.574)	-0.00594 (0.0852)	0.135 (0.650)	0.151 (0.567)	0.0197 (0.0358)
enviro	0.152 (0.546)	-0.0418 (1.395)	0.0222 (0.0943)	0.170 (0.890)	0.0440 (0.207)	-0.190 (0.184)
gov	-0.182 (0.368)	-0.0989 (3.815)	<b>-0.185*</b> (0.102)	-0.145 (0.450)	-0.148 (0.374)	-0.100 (0.239)
health_social	-0.262 (0.319)	0.120 (2.324)	0.102 (0.0670)	0.202 (1.094)	0.0351 (0.173)	0.0190 (0.0433)
laundry_photo	-0.263 (0.359)	0.0353 (0.918)	-0.0505 (0.147)	0.0342 (0.267)	-0.232 (0.400)	-0.0708 (0.188)
mil	0.327 (0.994)	-0.103 (3.849)	0.0353 (0.121)	0.149 (0.760)	0.163 (0.646)	<b>-0.496**</b> (0.235)
mining	-0.651 (0.992)	-0.0923 (3.816)	0.0253 (0.242)	-0.417 (0.467)	-0.417 (0.400)	0.000577 (0.211)
unknown	-0.162 (0.412)	-0.0958 (3.856)	0.104 (0.117)	0.268 (1.642)	-0.336 (0.362)	-0.0913 (0.435)
retail_wholesale	-0.0862 (0.214)	0.0322 (0.849)	0.0118 (0.0755)	-0.241 (0.498)	-0.174 (0.322)	-0.0775 (0.0972)
scientific_technical	-0.272 (0.304)	0.0579 (1.387)	-0.0605 (0.0989)	0.320 (0.841)	<b>0.352***</b> (0.0332)	-0.00839 (0.0774)
transport_logistics	0.311 (1.248)	-0.0993 (3.824)	-0.0883 (0.140)	0.0454 (0.284)	0.0589 (0.292)	-0.0245 (0.160)
utilities	-0.159 (0.288)	-0.0362 (1.177)	-0.0638 (0.0764)	0.0220 (0.145)	0.0705 (0.252)	<b>-0.262*</b> (0.143)
Observations	223	205	195	221	225	220

Standard errors  
in parentheses  
\*\*\* p<0.01, \*\*  
p<0.05, \* p<0.1

Table C11: OLS regressions for cost categories

VARIABLES	(1) facility_cost_c ontingency	(2) facility_cost_det ermination	(3) facility_cost_t rain	(4) facility_cost_t ransport	(5) facility_cost_f ine	(6) facility_cost_ storage	(7) facility_cost_e mergency
generator_status	0.0472 (0.0548)	0.0801 (0.0643)	0.00929 (0.0645)	0.109 (0.0679)	-0.0213 (0.0596)	-0.0502 (0.0542)	-0.00216 (0.0486)
years_employed_n	0.00220 (0.00695)	0.00830 (0.00633)	-1.00e-04 (0.00763)	-0.00176 (0.00678)	0.00313 (0.00738)	0.00119 (0.00542)	-0.000456 (0.00486)
years_certified	0.00278 (0.0138)	-0.0104 (0.0149)	-0.00946 (0.0170)	0.000575 (0.0143)	-0.0148 (0.0131)	-0.00258 (0.0128)	-0.000121 (0.0115)
NH_yes_no	-0.117 (0.102)	-0.0347 (0.113)	-0.0660 (0.119)	-0.109 (0.122)	-0.128 (0.113)	-0.0223 (0.0977)	-0.00236 (0.0877)
employees_count	-4.86e-06 (5.28e-05)	9.71e-05 (6.28e-05)	-2.89e-05 (8.39e-05)	-0.000100 (8.63e-05)	9.05e-05 (0.000112)	1.82e-05 (8.94e-05)	-1.68e-05 (8.02e-05)
Construction	-0.237** (0.119)	-0.121 (0.144)		0.0587 (0.143)	0.451*** (0.148)	-0.0727 (0.584)	-0.232 (0.523)
Educ	0.0528 (0.215)	-0.319* (0.186)	-0.126 (0.185)	0.506*** (0.183)	0.00900 (0.293)	0.412** (0.196)	0.324* (0.176)
Enviro	-0.168** (0.0732)	-0.150* (0.0804)	-0.196 (0.285)	0.142 (0.169)	0.345** (0.159)	0.143 (0.224)	-0.233 (0.201)
Gov	-0.223** (0.0872)	-0.158 (0.122)	-1.172*** (0.286)	-0.00390 (0.536)	-0.272 (0.285)	-0.0250 (0.346)	-0.226 (0.310)
health_social	-0.224** (0.0976)	0.265 (0.196)	-0.0599 (0.213)	0.513* (0.275)	-0.0347 (0.286)	0.149 (0.220)	-0.214 (0.197)
laundry_photo	-0.177** (0.0830)	0.0478 (0.248)	0.228 (0.292)	0.354 (0.362)	0.0784 (0.352)	0.0361 (0.342)	-0.216 (0.307)
Mil	-0.147 (0.386)	0.138 (0.437)	-0.503 (0.370)	0.0641 (0.368)	-0.233 (0.279)	-0.0409 (0.295)	0.0170 (0.264)
Mining	-0.0408 (0.110)	0.0271 (0.127)	0.506*** (0.127)	0.130 (0.130)	-0.477*** (0.108)	-0.0442 (0.582)	-0.242 (0.522)
Unknown	0.356 (0.278)	0.391 (0.261)	0.0208 (0.396)	0.630** (0.303)	-0.0574 (0.371)	-0.0691 (0.414)	0.269 (0.371)
retail_wholesale	0.0782 (0.207)	-0.0303 (0.241)	-0.174 (0.226)	0.164 (0.239)	0.241 (0.219)	-0.116 (0.190)	-0.142 (0.171)
scientific_technical	-0.467** (0.192)	-0.0630 (0.261)	-0.511 (0.350)	0.224 (0.296)	0.130 (0.203)	-0.377 (0.244)	-0.0713 (0.219)
transport_logistics	-0.447 (0.306)	-0.137 (0.109)	0.534*** (0.113)	0.127 (0.128)	0.500*** (0.122)	-0.0352 (0.414)	-0.229 (0.371)
Utilities	0.0185 (0.132)	-0.292** (0.125)	-0.297 (0.221)	-0.175 (0.169)	0.256 (0.155)	-0.154 (0.176)	-0.233 (0.158)
Observations	178	183	187	183	168	186	185
R-squared	0.089	0.081	0.100	0.071	0.070	0.072	0.071

Robust standard errors in  
parentheses  
\*\*\* p<0.01, \*\* p<0.05, \*  
p<0.1

Table C12: Ordered logit regressions for cost categories

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	facility_cost_c ontingency mfx dydx	facility_cost_d etermination mfx dydx	facility_cost _train mfx dydx	facility_cost _transport mfx dydx	facility_cost _fine mfx dydx	facility_cost _storage mfx dydx	facility_cost_ emergency mfx dydx
generator_status	0.0353 (0.0339)	0.0524 (0.0371)	-0.00460 (0.0465)	0.0644* (0.0361)	-0.00710 (0.0449)	-0.0245 (0.0271)	-0.00289 (0.0374)
years_employed_n	0.00273 (0.00349)	0.00542 (0.00368)	0.00102 (0.00516)	-0.000667 (0.00360)	0.000899 (0.00463)	0.000840 (0.00276)	0.000561 (0.00387)
years_certified	0.00119 (0.00801)	-0.00571 (0.00868)	-0.00596 (0.0150)	-0.000728 (0.00831)	-0.0119 (0.0136)	-0.00186 (0.00627)	0.000161 (0.00893)
NH_yes_no	-0.0790 (0.0642)	-0.0291 (0.0670)	-0.0495 (0.122)	-0.0683 (0.0661)	-0.121 (0.137)	-0.0152 (0.0485)	0.000744 (0.0668)
employees_count	-6.83e-06 (5.30e-05)	7.45e-05 (6.43e-05)	-1.07e-05 (7.25e-05)	-6.21e-05 (5.61e-05)	5.79e-05 (8.79e-05)	1.09e-05 (4.15e-05)	-1.62e-05 (6.10e-05)
construction	-0.125 (0.138)	-0.0770 (0.277)		0.0329 (0.361)	0.227 (1.346)	-0.0355 (0.215)	-0.155 (0.173)
educ	0.0380 (0.131)	-0.168** (0.0690)	-0.147 (0.162)	0.323** (0.157)	-0.0401 (0.194)	0.274* (0.162)	0.269 (0.172)
enviro	-0.105 (0.0804)	-0.0856 (0.106)	-0.156 (0.203)	0.0667 (0.152)	0.216 (0.840)	0.0791 (0.139)	-0.154** (0.0765)
gov	-0.113 (0.1000)	-0.0983 (0.151)	-0.524 (3.179)	-0.0194 (0.234)	-0.218 (0.327)	-0.0146 (0.146)	-0.144 (0.119)
health_social	-0.120* (0.0686)	0.167 (0.176)	-0.109 (0.176)	0.368** (0.180)	-0.0440 (0.180)	0.0758 (0.133)	-0.148* (0.0815)
laundry_photo	-0.106 (0.106)	0.00556 (0.217)	0.145 (0.617)	0.195 (0.275)	0.0764 (0.305)	0.0171 (0.170)	-0.145 (0.117)
mil	-0.0787 (0.135)	0.140 (0.264)	-0.334 (1.108)	0.0283 (0.205)	-0.180 (0.280)	-0.0212 (0.120)	0.0770 (0.257)
mining	-0.0317 (0.311)	0.0261 (0.377)	0.466 (3.155)	0.0834 (0.391)	-0.479*** (0.0400)	-0.0192 (0.238)	-0.148 (0.185)
unknown	0.309 (0.381)	0.293 (0.354)	-0.0427 (0.343)	0.423 (0.299)	-0.0131 (0.310)	-0.0334 (0.155)	0.216 (0.354)
retail_wholesale	0.0709 (0.145)	-0.0168 (0.126)	-0.130 (0.149)	0.0934 (0.142)	0.172 (0.463)	-0.0500 (0.0700)	-0.105 (0.0956)
scientific_technical	-0.171*** (0.0353)	-0.0438 (0.144)	-0.340 (1.117)	0.136 (0.195)	0.104 (0.246)	-0.115*** (0.0424)	-0.0352 (0.161)
transport_logistics	-0.164*** (0.0410)	-0.0776 (0.197)	0.485 (2.241)	0.0784 (0.277)	0.227 (1.548)	-0.0179 (0.171)	-0.150 (0.132)
utilities	0.00539 (0.109)	-0.143** (0.0689)	-0.215 (0.299)	-0.0807 (0.0879)	0.183 (0.530)	-0.0601 (0.0581)	-0.157** (0.0647)
Observations	178	183	187	183	168	186	185

Standard errors in  
parentheses

\*\*\* p<0.01, \*\* p<0.05, \*  
p<0.1

Table C13: Ordered probit regressions for cost categories

VARIABLES	(1) facility_cost_ contingency mfx dydx	(2) facility_cost_d etermination mfx dydx	(3) facility_cost _train mfx dydx	(4) facility_cost _transport mfx dydx	(5) facility_cost _fine mfx dydx	(6) facility_cost _storage mfx dydx	(7) facility_cost_ emergency mfx dydx
construction	-0.120 (0.175)	-0.0661 (0.319)		0.0330 (0.389)	0.173 (0.282)	-0.0341 (0.247)	-0.136 (0.227)
educ	0.0328 (0.123)	<b>-0.163**</b> (0.0787)	-0.101 (0.155)	<b>0.331**</b> (0.156)	0.000729 (0.158)	<b>0.293*</b> (0.158)	<b>0.289*</b> (0.168)
enviro	-0.0951 (0.0955)	-0.0796 (0.119)	-0.139 (0.176)	0.0795 (0.159)	0.166 (0.202)	0.0874 (0.144)	-0.142 (0.0897)
gov	-0.121 (0.106)	-0.0947 (0.173)	-0.512 (1.002)	-0.000928 (0.221)	-0.209 (0.245)	-0.0118 (0.165)	-0.141 (0.133)
health_social	-0.122 (0.0771)	0.190 (0.176)	-0.0604 (0.174)	<b>0.337*</b> (0.172)	-0.0214 (0.154)	0.0922 (0.141)	-0.136 (0.0937)
laundry_photo	-0.0987 (0.128)	0.0264 (0.238)	0.171 (0.300)	0.215 (0.266)	0.0461 (0.261)	0.0200 (0.185)	-0.133 (0.139)
mil	-0.0942 (0.105)	0.0872 (0.218)	-0.310 (0.342)	0.0362 (0.201)	-0.181 (0.247)	-0.0199 (0.135)	-0.0112 (0.177)
mining	-0.0349 (0.313)	0.0222 (0.391)	0.484 (0.972)	0.0788 (0.412)	<b>-0.481***</b> (0.0396)	-0.0223 (0.263)	-0.146 (0.208)
unknown	0.320 (0.375)	0.305 (0.354)	-0.000588 (0.337)	0.428 (0.309)	-0.0426 (0.295)	-0.0328 (0.177)	0.240 (0.351)
retail_wholesale	0.0568 (0.126)	-0.0158 (0.119)	-0.124 (0.141)	0.0953 (0.133)	0.136 (0.143)	-0.0539 (0.0723)	-0.0947 (0.0951)
scientific_technical	<b>-0.179***</b> (0.0367)	-0.0344 (0.146)	-0.314 (0.329)	0.136 (0.185)	0.0800 (0.146)	<b>-0.126***</b> (0.0444)	-0.0599 (0.132)
transport_logistics	<b>-0.172***</b> (0.0436)	-0.0752 (0.220)	0.494 (0.688)	0.0748 (0.291)	0.175 (0.326)	-0.0175 (0.192)	-0.138 (0.161)
utilities	0.0167 (0.114)	<b>-0.145*</b> (0.0765)	-0.196 (0.156)	-0.0887 (0.0936)	0.141 (0.149)	-0.0697 (0.0617)	<b>-0.145**</b> (0.0733)
Observations	178	183	187	183	168	186	185

Standard  
errors in  
parentheses  
\*\*\* p<0.01,  
\*\* p<0.05, \*  
p<0.1

Table C14: Heckman sample selection model coefficients and determination of significant variables in selection equation. The second column of each model is a probit regression to determine which of the covariates are significant in determining likelihood of responding to the survey. The insignificance of the model “rho” (correlation of selection and predicted outcome) in the third column shows that the survey results are uncorrelated with the selection covariates and therefore unlikely to be biased by sample selection.

VARIABLES	(1) face_to_face	(2) d_face_to_face	(3) athrho	(21) generator_size _response	(22) d_generator_size _response	(23) athrho
years_employed_n	0.000432 (0.00623)			0.00393 (0.00394)		
years_certified	0.0122 (0.0141)			<b>-0.0169*</b> (0.00886)		
employees_count	6.66e-05 (9.38e-05)			1.05e-05 (5.89e-05)		
construction	-0.557 (0.488)	-0.463 (0.339)		0.0278 (0.308)	-0.451 (0.339)	
Educ	-0.0404 (0.270)	<b>0.468**</b> (0.199)		0.0512 (0.167)	<b>0.478**</b> (0.199)	
Enviro	0.221 (0.314)	-0.292 (0.230)		-0.176 (0.198)	-0.288 (0.230)	
Gov	-0.298 (0.400)	-0.384 (0.282)		-0.279 (0.254)	-0.370 (0.283)	
health_social	<b>-0.523**</b> (0.230)	-0.0371 (0.167)		0.0792 (0.147)	-0.0259 (0.167)	
laundry_photo	-0.223 (0.489)	-0.349 (0.346)		<b>0.554*</b> (0.312)	-0.333 (0.346)	
Mil	0.443 (0.534)	<b>1.346***</b> (0.479)		<b>-0.522*</b> (0.316)	<b>1.361***</b> (0.479)	
Mining	<b>-1.510**</b> (0.757)	1.138 (0.889)		0.225 (0.482)	1.134 (0.887)	
Unknown	-0.0910 (0.493)	0.311 (0.463)		0.0460 (0.425)	-0.131 (0.556)	
retail_wholesale	-0.0140 (0.212)	<b>-0.256*</b> (0.148)		<b>-0.238*</b> (0.132)	-0.242 (0.149)	
scientific_technical	<b>-0.533**</b> (0.257)	-0.112 (0.214)		-0.0993 (0.166)	-0.0996 (0.214)	
transport_logistics	0.403 (0.385)	-0.164 (0.308)		-0.260 (0.247)	-0.151 (0.308)	
Utilities	-0.0360 (0.229)	-0.117 (0.184)		<b>-0.352**</b> (0.147)	-0.101 (0.184)	
Auto		-5.408 (8,100)			-5.973 (56,031)	

Other		-5.243			-5.820	
		(13,403)			(92,761)	
type_unknown		-5.371			-5.937	
		(9,485)			(65,532)	
generator_size		-0.105**			-0.109**	
		(0.0456)			(0.0452)	
Constant	2.463***	-1.032***	0.0186	0.686*	-1.040***	0.423
	(0.700)	(0.114)	(0.618)	(0.376)	(0.113)	(0.501)
Observations	1,989	1,989	1,989	1,994	1,994	1,994

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Standard errors in  
parentheses

\*\*\* p<0.01, \*\*  
p<0.05, \* p<0.1

Table C15: Ordered probit with sample selection model coefficients and determination of significant variables in selection equation. The second column of each model is a probit regression to determine which of the covariates are significant in determining likelihood of responding to the survey. The insignificance of the model “rho” (correlation of selection and predicted outcome) in the third column shows that the survey results are uncorrelated with the selection covariates and therefore unlikely to be biased by sample selection.

VARIABLES	(1)	(2)	(6)	(27)	(28)	(31)
	face_to_face	d_face_to_face	athrho	generator_size _response	d_generator_size _response	athrho
years_employed_n	0.000211 (0.0122)			0.00938 (0.0136)		
years_certified	0.0201 (0.0277)			-0.0415 (0.0486)		
employees_count	8.77e-05 (0.000188)			1.18e-05 (0.000256)		
Construction	-0.826 (0.797)	-0.443 (0.339)		0.0110 (1.217)	-0.434 (0.349)	
Educ	0.0521 (0.680)	0.486** (0.199)		0.261 (0.803)	0.490** (0.205)	
Enviro	0.439 (0.724)	-0.273 (0.230)		-0.489 (0.544)	-0.270 (0.231)	
Gov	-0.586 (0.678)	-0.366 (0.282)		-0.680 (0.721)	-0.355 (0.287)	
health_social	-0.729 (0.445)	-0.0188 (0.167)		0.224 (0.434)	-0.00507 (0.166)	
laundry_photo	-0.456 (0.884)	-0.332 (0.346)		1.237 (1.363)	-0.316 (0.350)	
Mil	5.583 (1,433)	1.368*** (0.479)		-0.808 (2.136)	1.377*** (0.479)	
Mining	-1.620 (1.874)	1.157 (0.889)		0.843 (2.023)	1.138 (0.913)	
Unknown	-0.146 (0.976)	0.334 (0.462)		0.165 (1.632)	-0.113 (0.573)	
retail_wholesale	-0.0690 (0.426)	-0.239 (0.148)		-0.629 (0.565)	-0.226 (0.150)	
scientific_technical	-0.726 (0.462)	-0.0910 (0.214)		-0.249 (0.618)	-0.0822 (0.215)	
transport_logistics	5.274 (1,862)	-0.143 (0.308)		-0.595 (0.767)	-0.134 (0.314)	
Utilities	-0.0527 (0.421)	-0.1000 (0.184)		-0.765 (0.765)	-0.0857 (0.184)	
generator_size		-0.0980** (0.0453)			-0.103** (0.0441)	

Constant		-1.063*** (0.113)	0.226 (1.206)		-1.068*** (0.111)	0.884 (1.545)
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Observations	1,989	1,989	1,989	1,994	1,994	1,994
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Standard errors

in parentheses

\*\*\* p<0.01, \*\*

p<0.05, \* p<0.1

**Appendix D: Copy of Final Survey**

**\* 1. Please select the role that best describes you:**

- Hazardous Waste Coordinator (Past or Current)
- Consultant
- Transporter

**Basic Information**

**2. First Name**

**3. Last Name**

**6. Contact Phone Number**

**\* 7. RCRA ID of Facility**

**8. Facility Name**

**9. Name of Company/Organization Operating the Facility**

**10. How long have you been employed in your current position (years/months)?**

**11. How long have you been certified by the HWCC program?**

**\* 12. When was the most recent HWCC training that you attended? (MM-YYYY)**

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13. Please list your reasons for attending

- Required
- Personal Growth
- Networking
- Other (please specify)

14. How many people from your facility attended the HWCC over the past two years?

## Facility Information

### 15. Generator Status

- FQG1 (Federal LQG)
- FQG2 (Federal SQG)
- SQG (Federal CESQG)
- Other (please specify)

### 16. Types and Quantities of Hazardous Waste Generated in 2014?

P-listed waste (pounds per year)

U-listed waste (pounds per year)

F-listed waste (pounds per year)

K-listed waste (pounds per year)

Characteristically ignitable waste (pounds per year)

Characteristically corrosive waste (pounds per year)

Characteristically reactive waste (pounds per year)

Characteristically toxic waste (pounds per year)

### 17. Approximate Number of Employees in Facility

### 18. Does your company/organization operate in other states besides New Hampshire?

- No

Facility Information (cont.)

19. If so, in which other states does your company/organization operate?

- |                                      |   |   |
|--------------------------------------|---|---|
| <input type="checkbox"/> Alabama     | <input type="checkbox"/> Louisiana      | <input type="checkbox"/> Ohio           |
| <input type="checkbox"/> Alaska      | <input type="checkbox"/> Maine          | <input type="checkbox"/> Oklahoma       |
| <input type="checkbox"/> Arizona     | <input type="checkbox"/> Maryland       | <input type="checkbox"/> Oregon         |
| <input type="checkbox"/> Arkansas    | <input type="checkbox"/> Massachusetts  | <input type="checkbox"/> Pennsylvania   |
| <input type="checkbox"/> California  | <input type="checkbox"/> Michigan       | <input type="checkbox"/> Rhode Island   |
| <input type="checkbox"/> Colorado    | <input type="checkbox"/> Minnesota      | <input type="checkbox"/> South Carolina |
| <input type="checkbox"/> Connecticut | <input type="checkbox"/> Mississippi    | <input type="checkbox"/> South Dakota   |
| <input type="checkbox"/> Delaware    | <input type="checkbox"/> Missouri       | <input type="checkbox"/> Tennessee      |
| <input type="checkbox"/> Florida     | <input type="checkbox"/> Montana        | <input type="checkbox"/> Texas          |
| <input type="checkbox"/> Georgia     | <input type="checkbox"/> Nebraska       | <input type="checkbox"/> Utah           |
| <input type="checkbox"/> Hawaii      | <input type="checkbox"/> Nevada         | <input type="checkbox"/> Vermont        |
| <input type="checkbox"/> Idaho       | <input type="checkbox"/> New Hampshire  | <input type="checkbox"/> Virginia       |
| <input type="checkbox"/> Illinois    | <input type="checkbox"/> New Jersey     | <input type="checkbox"/> Washington     |
| <input type="checkbox"/> Indiana     | <input type="checkbox"/> New Mexico     | <input type="checkbox"/> West Virginia  |
| <input type="checkbox"/> Iowa        | <input type="checkbox"/> New York       | <input type="checkbox"/> Wisconsin      |
| <input type="checkbox"/> Kansas      | <input type="checkbox"/> North Carolina | <input type="checkbox"/> Wyoming        |
| <input type="checkbox"/> Kentucky    | <input type="checkbox"/> North Dakota   |   |

Other (please specify any US or Canadian Territories in which your company operates)

20. Has your generator size changed following completion of the HWCC program?

- Increased
- Remained the Same
- Decreased
- Other (please specify)

\* 21. Please rate the following

	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree
Our facility's ability to conduct hazardous waste characterization improved following HWCC	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Employees at our facility have improved knowledge of effective hazardous waste management procedures following HWCC	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Our facility's ability to conduct self-inspections has improved following HWCC	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

22. Please provide any comments you have related to changes in your facility's operations as a result of the HWCC program:

**Relationships**

\* 23. Following HWCC program completion:

	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree	N/A
We are more likely to reach out to regulators if we have questions about compliance regarding any hazardous waste generation or management issues.	<input type="radio"/>				
We are more likely to reach out to regulators if we have questions about compliance regarding environmental regulations for other media (air, water, etc.).	<input type="radio"/>				
Our facility's relationship with regulators has improved	<input type="radio"/>				
Professional relationships within our organization have improved	<input type="radio"/>				
Employees at our organization have improved their relationships with other organizations' employees.	<input type="radio"/>				

\* 24. Face-to-face training is preferable to online training.

- Strongly Agree
- Somewhat Agree
- Somewhat Disagree
- Strongly Disagree

25. Why or why not?

26. Please provide any comments related to the effect of the HWCC program on your professional relationships with regulators or others:

Compliance

27. When was your facility last inspected for hazardous waste compliance? (MM-YYYY)

28. Who performed this inspection?

- State Agency
- EPA
- Local Agency
- Internal Corporate Audit
- Other (please specify)

\* 29. Do you believe the probability of having a violation found during an inspection increased or decreased following HWCC training?

- Increased
- Remained the Same
- Decreased

30. Please provide any comments related to changes in your facility or organization's regulatory compliance activities as a result of the HWCC program:

## Costs

\* 31. Please state whether your facility's costs increased or decreased in each of the following areas since the inception of the HWCC program:

	Costs increased	Costs decreased	No change	N/A
Hazardous waste determination	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Transportation of hazardous waste	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Training	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Contingency plan	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Emergency preparedness	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Chance of fine due to violation during inspection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hazardous waste storage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 32. Please provide an approximation of the total annual changes in costs to your facility as a result of the HWCC program:

- Increased by more than \$100,000 per year
- Increased by between \$10,000 and \$100,000 per year
- Increased by between \$1,000 and \$10,000 per year
- Increased by less than \$1,000 per year
- Decreased by less than \$1,000 per year
- Decreased by between \$1,000 and \$10,000 per year
- Decreased by between \$10,000 and \$100,000 per year
- Decreased by more than \$100,000 per year

33. Please provide any additional comments related to changes in facility costs as a result of the HWCC program:

Transporter Page

**If respondent listed role as 'transporter'**

\* 34. First Name

\* 35. Last Name

\* 36. Position Title

\* 37. Name of Company/Organization

\* 38. Email Address

\* 39. Contact Phone Number

\* 40. Does your organization operate exclusively in New Hampshire?

Yes

No

\* 41. How long have you been employed in your current position (years/months)?

\* 42. When was the most recent HWCC training that you attended? (MM-YYYY)

\* 43. Please list your reasons for attending the most recent HWCC program

- Required
- Personal Growth
- Networking
- Other (please specify)

\* 44. Following HWCC program completion, did you feel you were more or less likely to reach out to regulators if you had questions about compliance regarding any hazardous waste generation or management issues?

- More Likely
- Somewhat more likely
- Somewhat less likely
- Less likely

\* 45. Following HWCC program completion, did you feel you were more or less likely to reach out to regulators if you had questions about compliance regarding environmental regulations for other media (air, water, etc.)?

- More likely
- Somewhat more likely
- Somewhat less likely
- Less likely

\* 46. Compliance coordinators in New Hampshire are more knowledgeable than in other states

- Strongly Agree
- Somewhat Agree
- Somewhat Disagree
- Strongly Disagree

\* 47. Have relationships within your company improved following the completion of the HWCC program?

- Strongly Agree
- Somewhat Agree
- Somewhat Disagree
- Strongly Disagree

\* 48. Have your relationships with other industry participants improved following completion of the HWCC program?

- Strongly Agree
- Somewhat Agree
- Somewhat Disagree
- Strongly Disagree

\* 49. The face to face training is preferable to online training

- Strongly Agree
- Somewhat Agree
- Somewhat Disagree
- Strongly Disagree

50. Why or why not?

**51. Please provide comments about any changes in your organization's relationship with regulators resulting from HWCC**

Consultant Page

**If respondent listed 'consultant' as role**

\* 52. First Name

\* 53. Last Name

\* 54. Position Title

\* 55. Name of Company

\* 56. Email Address

\* 57. Contact Phone Number

\* 58. Does your company/organization operate exclusively in New Hampshire?

Yes

No

\* 59. How long have you been employed in your current position (years/months)?

\* 60. When was the most recent HWCC training that you attended? (MM-YYYY)

\* 61. Please list your reasons for attending the most recent HWCC program

- Required
- Personal Growth
- Networking
- Other (please specify)

\* 62. Following HWCC program completion, did you feel you were more or less likely to reach out to regulators if you had questions about compliance regarding any hazardous waste generation or management issues?

- More likely
- Somewhat more likely
- Somewhat less likely
- Less likely

\* 63. Following HWCC program completion, did you feel you were more or less likely to reach out to regulators if you had questions about compliance regarding environmental regulations for other media (air, water, etc.)?

- More likely
- Somewhat more likely
- Somewhat less likely
- Less likely

\* 64. Compliance coordinators in New Hampshire are more knowledgeable than in other states

- Strongly Agree
- Somewhat Agree
- Somewhat Disagree
- Strongly Disagree

\* 65. Have relationships within your company improved following the completion of the HWCC program?

- Strongly Agree
- Somewhat Agree
- Somewhat Disagree
- Strongly Disagree

\* 66. Have your relationships with other industry participants improved following completion of the HWCC program?

- Strongly Agree
- Somewhat Agree
- Somewhat Disagree
- Strongly Disagree

\* 67. The face to face training is preferable to online training

- Strongly Agree
- Somewhat Agree
- Somewhat Disagree
- Strongly Disagree

68. Why or why not?

69. Please provide comments about any changes in your organization's relationship with regulators resulting from HWCC