

# REGULATED COMMUNITY'S PERCEPTIONS ON POLLUTION PREVENTION



Report by the Iowa Department of Natural Resources  
based on a study done by Hill Simonton Bell, L.C.



The Iowa Department of Natural Resources (DNR) recognizes pollution prevention (P2) as a sustainable strategy for assisting members of the regulated community to meet their regulatory obligations and encourage environmental performance beyond minimum compliance limits. Accordingly, the DNR is currently seeking “best practices” that can be integrated into its programs and services to support the implementation of pollution prevention by the regulated community. The success of this endeavor is contingent upon the DNR understanding the issues that influence customers’ decisions with regard to environmental compliance and their current perceptions related to pollution prevention.



## METHODOLOGY

To obtain this information the DNR contracted with Hill Simonton Bell, L.C. to conduct a comprehensive scientific survey of the regulated community. The telephone survey research was conducted by the contractor between January 27 and February 9, 2000.

The population used in the survey was defined as all businesses with facilities in Iowa that have air and/or wastewater permits. Specifically, the survey questions were directed to the person within each facility who is responsible for environmental compliance related activities. The total sample of 300 was randomly selected from DNR air and wastewater permit lists. The maximum standard error range is  $\pm 5.7$  percent at the 95 percent confidence level.

## DEMOGRAPHICS

For 81 percent of the respondent facilities, someone other than the owner is primarily responsible for managing environmental compliance activities. At the remaining 19 percent, the owner of the company assumes these responsibilities and responded to the survey questions.

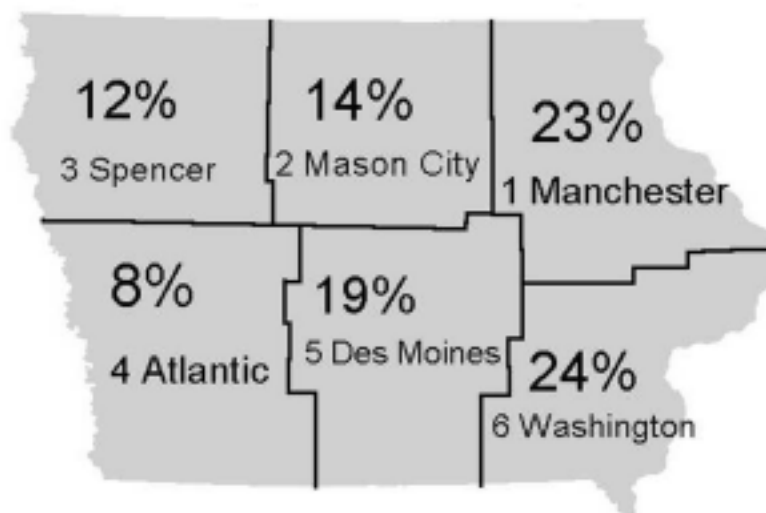
Almost one-half (47 percent) of the respondent facilities have a parent company.

**Table 1: *Distribution of Full-Time Employees***

Number of Full-Time Employees	Percentage of the 300 Facilities Surveyed
1-14	23%
15-49	26%
50-199	27%
200+	22%
No answer	2%

Map 1 shows the distribution of the survey respondents according to DNR field office regions. This field office distribution generally corresponds to the geographic distribution of regulated facilities in Iowa.

Map 1



# FINDINGS

## DEFINITION OF POLLUTION PREVENTION

Respondents were asked to define the term “pollution prevention.” Nearly five percent gave the generally accepted federal and state environmental agencies’ definition “to eliminate/prevent/reduce pollution at the source.”

When asked to describe programs that “. . . eliminate or reduce pollution at the source before it is even created and prior to reuse, treatment or disposal,” the term most frequently given by respondents (19 percent) was “pollution prevention.” However, nearly one-third of the respondents “didn’t know” what term to apply to the pollution prevention definition question.

Responses were extremely varied and no common definition of pollution prevention exists among Iowa businesses.

Approximately 27 percent of respondents defined pollution prevention in terms of a single medium with a control or compliance focus (i.e., wastewater treatment, maintaining acceptable limits, controlling air emissions).

## CHANGES IN OPERATIONS OR PRODUCTION

See Table 2 for pollution prevention changes in operations or production over the past two years. The most common changes were equipment and process modification.

*Table 2: Percent of Respondents Who Made Each Type of Pollution Prevention Change*

P2 Change Made	Percent of Respondents Who Made Each Change
Equipment modification	49%
Process modification	48%
Changes to cleaning or maintenance operations	43%
Substitution to less toxic materials	40%
Changes in handling and use of raw materials	39%
Product reformulation	23%

Approximately 78 percent of businesses reported having made one or more changes. Fifty-two percent of the total respondents made three or more changes. Seventy percent of the 65 businesses reporting no pollution prevention changes have less than 50 employees. Facilities having a parent company are more likely, than those that do not, to have made all types of changes, except product reformulation.

As seen in Table 3, pollution prevention changes made vary with the number of employees in a business. The larger the employee base, the more likely the business has made changes

Table 3: Pollution Prevention Changes Made Compared to the Number of Employees

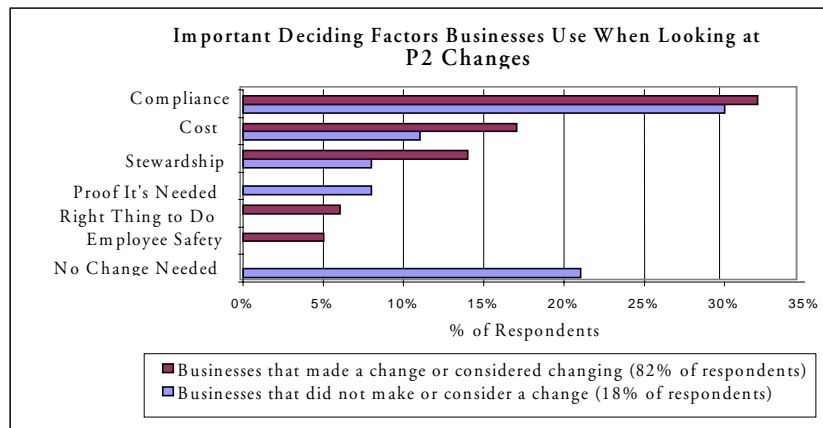
P2 Change Made	1 – 14 Employees *n=70	15 – 49 Employees n=77	50 – 199 Employees n=82	200+ Employees n=65
Equipment modification	27%	52%	55%	65%
Process modification	34%	44%	51%	65%
Changes to cleaning or maintenance operations	27%	46%	46%	55%
Substitution to less toxic materials	17%	38%	43%	63%
Changes in handling and use of raw materials	21%	40%	43%	49%
Product reformulation	14%	14%	31%	37%
Other	31%	65%	30%	41%
No changes made	40%	22%	16%	9%

(\* n refers to the number of facilities responding in each category.)

## IMPORTANT FACTORS BUSINESSES CONSIDER WHEN DECIDING TO MAKE POLLUTION PREVENTION CHANGES

When given an open-ended question, regulatory compliance and cost are the two most important factors that were mentioned by all respondents (see Graph 1).

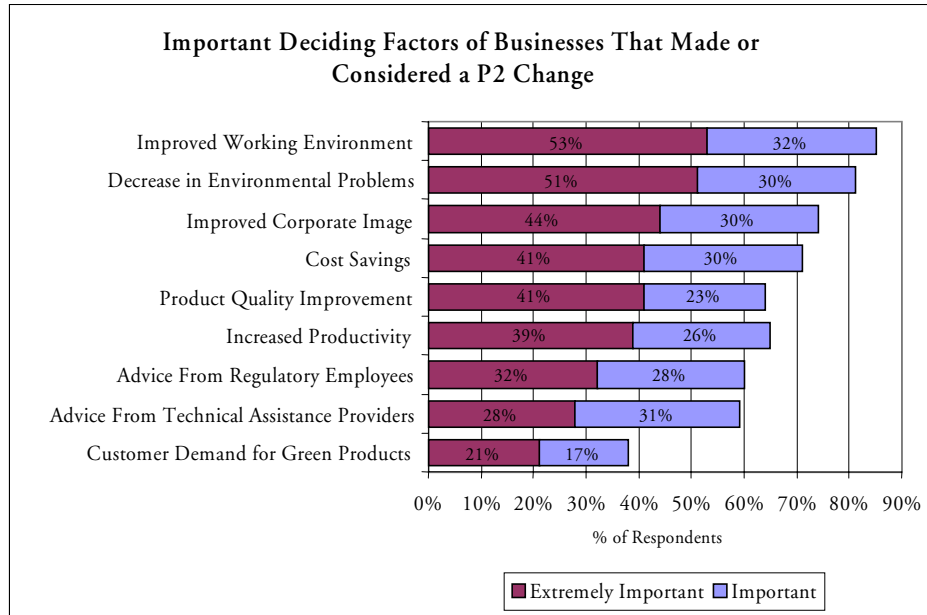
Graph 1



Businesses indicating they did not make or consider changes also cited “proof it’s needed” (8 percent) and “no change needed” (21 percent) as factors influencing these decisions.

Given a list of factors to choose from, businesses that made or considered making changes cited improved working environment, decrease in environmental problems, and improved corporate image as the top three factors influencing their decisions to change (see Graph 2).

## Graph 2



There is a statistically significant relationship between the 157 businesses that made three or more pollution prevention changes and two of the decision factors. This is described in the following findings:

- ⇒ Twenty-six percent stated that customer demand for “green” products was “extremely important” in their pollution prevention change decision-making.
- ⇒ Forty-five percent stated that product quality improvement strongly influenced their decision to make pollution prevention changes.

The survey noted that 13 percent of the 53 businesses that reported having not made or considered making changes said they “don’t know” if consumer demand for “green” products is an influential factor in their pollution prevention decision-making.

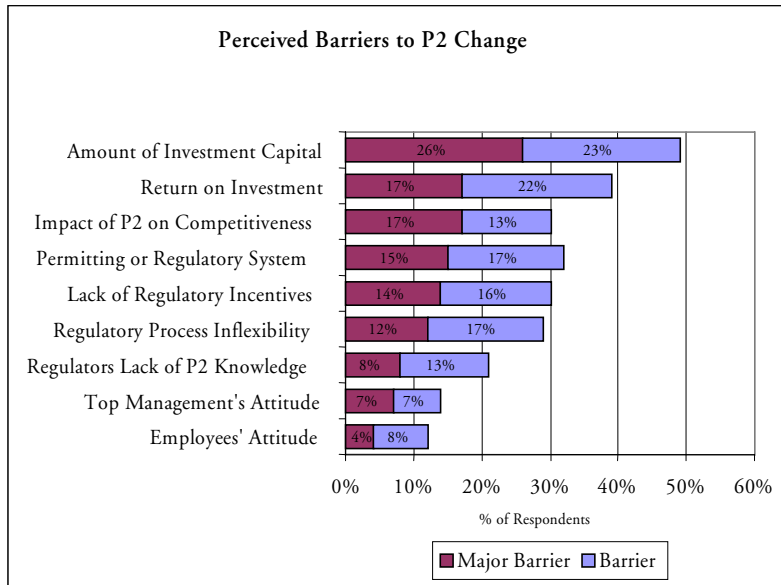
## PERCEIVED BARRIERS

When given an open-ended question, the most significant perceived barrier that businesses cited for initiating or expanding pollution prevention efforts relate to economics.

When given a list of nine factors to choose from, the initial capital costs needed for long-range process changes and return on investment are highly rated as major barriers (see Graph 3).

Other perceived barriers identified by respondents are related to the current regulatory system and internal staff/employee attitudes.

Graph 3



Businesses who made no changes are more likely to view management attitude as a major barrier (19 percent) than are those who made one to two changes (4 percent) and 3 or more changes (3 percent).

## INCENTIVES

Businesses indicating a lack of regulatory incentives as a barrier to pollution prevention changes were asked what would make effective incentives to go beyond minimal compliance limits.

Financial incentives are by far the most suggested method for encouraging businesses to improve their environmental performance and go beyond minimal compliance using pollution prevention strategies and practices. See Table 4 for other incentives identified by respondents.

Table 4: *Effective Incentives for Businesses to Go Beyond Minimal Compliance*

Incentive	% of Respondents
Financial (i.e., increased profitability, financial aid)	47%
Tax incentives	13%
Regulatory flexibility	13%
Public recognition	13%
Increased technical assistance/support	11%
Satisfaction of helping the environment	4%

## POLLUTION PREVENTION INFORMATIONAL/ASSISTANCE RESOURCES

Various resources may be used by businesses for information or technical assistance related to alternative practices or technologies that address environmental issues. Respondents were asked to rate a list of assistance resources as “very useful,” “somewhat useful” or “not useful at all.” The survey showed the following findings:

- ⇒ **The overall two highest rated resources are a company’s own employees/research department** (57 percent and 36 percent rated as “very useful” and “somewhat useful,” respectively) **and the DNR** (50 percent rated as “very useful” and 36 percent said “somewhat useful”)
  
- ⇒ If respondents stated that the DNR was “somewhat useful” or “very useful” as a resource, they were asked to identify who within the DNR provided the information or service. The breakdown for the 192 responses that specified an individual or office within the Department is as follows: 107 identified Environmental Protection Division staff in the central office; 77 identified field office staff; and, eight identified the Waste Management Assistance Division.

Companies that made three or more changes are more likely to view certain resources as “very useful” than are the companies that made fewer than three changes (see Table 5).

**Table 5: Percent of Companies Perceiving the Resource as “Very Useful”**

Resource	No Changes	1-2 Changes	3+ Changes
Own company’s employees or research	45%	51%	66%
Vendors and suppliers	23%	19%	31%
Trade associations’ publications/conferences	22%	24%	35%
Other companies	29%	17%	26%
Customers	9%	17%	19%

There are several statistically significant differences between resource usefulness ratings and business size as defined by number of employees:

- ⇒ The perception of DNR’s usefulness as a resource is greater at the smallest company level (less than 15 employees) than the large company category (200+ employees). Table 6 compares survey findings among the four business-size categories.

**Table 6: DNR as an Informational/Technical Assistance Resource**

Resource Usefulness	1 – 14 Employees n=70	15 – 49 Employees n=77	50 – 199 Employees n=82	200+ Employees n=65
Not at all useful	7%	8%	11%	25%
Somewhat useful	26%	42%	45%	31%
Very useful	64%	48%	44%	45%
Don’t know/not used	3%	3%	0%	0%

Businesses with less than 15 employees are more likely not to use outside consultants or contractors in comparison to larger firms as shown in Table 7. Comments received during DNR’s June 1999 Regulated Community Focus Group meetings indicate that cost is the primary limiting factor for small businesses to use private consultants.

**Table 7: Outside Consultants/Contractors as Informational/Technical Assistance Resources**

Resource Usefulness	1 – 14 Employees n=70	15 – 49 Employees n=77	50 – 199 Employees n=82	200+ Employees n=65
Not at all useful	39%	12%	16%	5%
Somewhat useful	27%	46%	44%	62%
Very useful	27%	43%	37%	32%
Don’t know/not used	7%	0%	4%	2%

Likewise, businesses in the smallest employee category (1-14 employees) are more likely to view vendors/suppliers as “not at all useful” (27 percent) as a resource (see Table 8).

**Table 8: Vendors/Suppliers as Informational/Technical Assistance Resources**

Resource Usefulness	1 – 14 Employees n=70	15 – 49 Employees n=77	50 – 199 Employees n=82	200+ Employees n=65
Not at all useful	27%	12%	10%	6%
Somewhat useful	44%	69%	60%	65%
Very useful	26%	20%	31%	29%
Don’t know/not used	3%	0%	0%	0%

Regarding small business assistance programs, firms in the 50-199 employees category are more likely to view these services as “very useful” (27 percent) compared to the other categories as shown in Table 9. Differences in the usefulness perception of these programs may be function of whether companies have taken advantage of these services or not.

**Table 9: Small Business Assistance Programs as Informational/Technical Assistance Resources**

Resource Usefulness	1 – 14 Employees n=70	15 – 49 Employees n=77	50 – 199 Employees n=82	200+ Employees n=65
Not at all useful	63%	38%	50%	55%
Somewhat useful	16%	34%	15%	17%
Very useful	14%	18%	27%	11%
Don’t know/not used	7%	10%	9%	17%

The 115 respondents who indicated small business assistance programs are “very useful” or “somewhat useful” were asked to name the one program that was most beneficial to their company. The two most frequently mentioned programs and services are the Iowa Waste Reduction Center at UNI (26 percent) and DNR (7 percent). Based on survey findings, the latter appears to be referring to businesses’ interactions with regulatory staff.

(Note: Based on some of the respondents’ answers to this question, it is noted that some programs perceived to be “small business assistance” are actually university extension programs, consultants or trade

associations that were listed in the survey as separate resource categories. It suggests that there may be some overlap among these categories and this should be considered when interpreting the findings.)

Viewpoints on the resource usefulness of the Internet appear to be related to the size of the company, as shown in Table 10. Smaller companies may not have the staff resources to dedicate to Internet usage.

**Table 10: Internet as an Informational Resource**

Resource Usefulness	1 – 14 Employees n=70	15 – 49 Employees n=77	50 – 199 Employees n=82	200+ Employees n=65
Not at all useful	49%	27%	28%	20%
Somewhat useful	37%	44%	48%	46%
Very useful	7%	21%	17%	31%
Don't know/not used	7%	8%	7%	3%

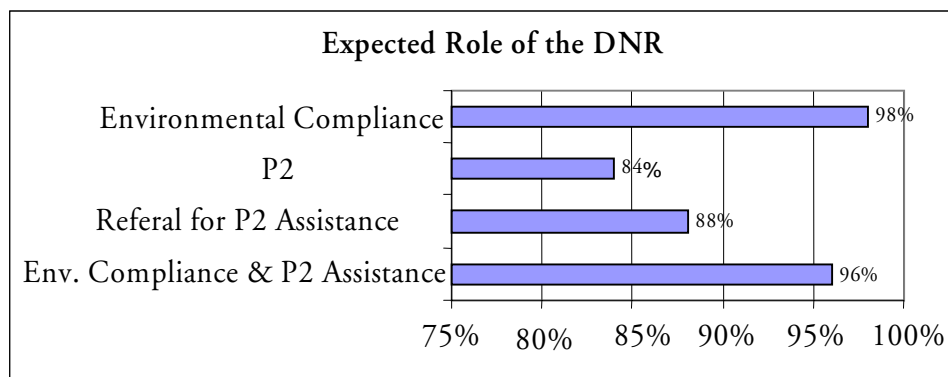
## DNR'S EXPECTED ROLE

The vast majority of the respondents (96 percent) expect DNR to provide both regulatory compliance and pollution prevention assistance services.

Eighty-eight percent expected DNR to be able to refer businesses to other organizations and programs that can provide pollution prevention information and technical assistance.

As Graph 4 shows, pollution prevention assistance alone is not expected by business, as much as linking pollution prevention with compliance assistance services.

**Graph 4**



# CONCLUSIONS/RECOMMENDATIONS

Conclusions and recommendations are based upon the January–February 2000 telephone survey (Appendix A) findings and comments received during DNR’s three Regulated Community Focus Group Meetings conducted during June 1999.

## DEFINITION OF POLLUTION PREVENTION

### Conclusions

- No common definition of pollution prevention exists among Iowa businesses.
- However, many of the respondents demonstrated an understanding of the basic concept or used a substitute term that approximated the generally accepted pollution prevention definition used by federal and state environmental agencies.

### Recommendations

- An all-out campaign to reach a common definition of pollution prevention is likely not worth the resources it would take to accomplish this.
- Assistance providers and regulatory staff should be aware when using the term pollution prevention that others may not understand the concept in the same way.
- Sector-specific examples should be used to illustrate pollution prevention strategies and practices.
- When possible, those working with businesses should adjust their language to an individual business’s term for pollution prevention if it captures the basic “eliminate or reduce waste at the source” concept.

## SMALL BUSINESS POLLUTION PREVENTION OPPORTUNITIES

### Conclusions

- A majority of the businesses that made no changes have less than 50 employees.
- The smaller the business, the less likely the business is to have made pollution prevention changes, as seen in Table 3.

### Recommendations

- The opportunity is available for assistance programs to further promote their services to small businesses.
- Assistance providers and regulatory staff need to understand that small businesses, particularly those with less than 15 employees, have staff constraints and perceptions that limit the informational and technical resources they currently find useful.

## FACTORS BUSINESSES CONSIDER WHEN MAKING POLLUTION PREVENTION CHANGES

### Conclusions

- When asked an open ended question as to what is the most important factor that influenced/ would influence the respondents to make changes or consider changes for reasons of pollution prevention, the most common factors cited were related to environmental compliance and cost (see Graph 1).
- However, when given a list of factors, those that have made or considered pollution prevention changes indicated that additional factors were extremely important in their decision making (see Graph 2). These included improved working environment, improved corporate image, and increased productivity.
- For those that made three or more changes, customer demand for “green” products and improved product quality were also cited as significant influences.
- The findings suggest that a business which has implemented pollution prevention changes recognizes that the additional factors cited in the decision-making process have cost saving attributes even if not all have been quantified.

### Recommendations

- In promoting pollution prevention, continue to stress the economic and compliance benefits.

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### Conclusions

- Respondents that indicated they have not made or considered changes cited “proof it’s needed” and “no change needed” as important decision-making factors.
- It is suggested that those who didn’t make changes view pollution prevention only in terms of addressing compliance issues and not as a means to improve production efficiency, profitability and image. While in compliance, there is “no need” to make changes.
- This could be an indicator that the term pollution prevention is perceived by some companies to equate to other terms such as pollution control.

### Recommendations:

- Evidence will need to be provided to encourage businesses to incorporate pollution prevention, including distributing sector-specific informational packets, and disseminating information on concepts such as environmental accounting for demonstrating the actual short- and long-term financial benefits of pollution prevention projects.
- Using testimonials and case studies from businesses that have successfully made pollution prevention changes can be effective mechanisms for persuading other businesses that pollution prevention provides benefits beyond their current perceptions.

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### Conclusions

- After cost and compliance, the concepts of environmental stewardship and “doing the right thing” were cited by respondents (Graph 1) as important factors for making pollution prevention changes.

### Recommendations

- The stewardship message should continue to be included as a reason for doing pollution prevention efforts. Perhaps the message can most effectively be delivered by businesses that strongly believe in and have acted upon this belief.

### Conclusions

- Customer demands for “green” products ranks relatively low as a factor in pollution prevention decision-making. Only 21 percent of respondents who made or considered making changes rated this factor as “extremely important.”
- The survey also noted that 13 percent of the 53 businesses that have not made or considered making changes said they “don’t know” if consumer demand for “green” products is an influential factor in their pollution prevention decision-making.
- Businesses may not know or do not care about their customers “green” concerns.
- Or, companies may not have a mechanism in place to receive this type of feedback.
- Customers could be untapped change agents for more widespread adoption of pollution prevention by businesses.

### Recommendations

- Customers should be informed as to their current lack of influence and educate them on ways to become a more significant factor.
- DNR and other business assistance organizations should work with non-governmental organizations (NGOs) and/or citizen groups on informing customers of the environmental benefits pollution prevention can have on the products they purchase and the processes used to produce these goods.

## PERCEIVED BARRIERS & INCENTIVES

The most common perceived barriers to pollution prevention are economic, regulatory and attitudinal (Graph 3). The study also identified incentives to encourage wider adoption of pollution prevention practices and to promote environmental performance beyond compliance requirements.

### Conclusions

Perceived **economic barriers** to innovative pollution prevention technologies and projects include:

- lack of credible data on innovative technologies’ capital costs and return on investment; cost in terms of staff time needed to research availability and performance of innovative technologies;
- lack of financing for innovative pollution prevention projects;
- lack of financial benefits or rewards for using pollution prevention; and,
- large investments in technologies already in place prevent selection of innovative alternative technologies.

### Recommendations

**Economic-related incentives** for overcoming perceived economic barriers include:

- Successful pollution prevention project case studies and resources on available innovative technologies should be developed, and include information on capital costs, return on investment, and performance in terms of improved product quality and operational efficiency.
- Business assistance providers should promote the use of environmental accounting principles (i.e., full-cost accounting, activity-based costing) to businesses for evaluating pollution prevention projects and alternative technologies. These cost accounting techniques track and report all costs, including those typically hidden in general overhead accounts, to facilitate financially sound business decision-making.
- DNR should investigate creative ways to offer financial incentives. In cooperation with other state agencies, this investigation should include changes to the state’s tax codes and existing financial

assistance programs. In addition, potential incentives and current barriers to pollution prevention financing within the banking and lending institutional sector should also be considered in this evaluation.

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### Conclusions

Perceived **regulatory barriers** focused primarily upon permitting.

- Pollution prevention operational changes involving equipment or process modifications often require permit amendments or applying for new permits.
- The survey found that companies, which made equipment modifications, are more likely to perceive the current permitting system as a major barrier (39 percent) than those that did not make these changes (26 percent).
- More involved process changes can require multiple permit amendments and/or permit applications.
- There is a cost to companies, in terms of staff time, associated with permitting activities.
- Lengthy permit turnaround times can significantly delay projects.

### Recommendations

Regulatory flexibility incentives related to these perceived barriers were identified in the survey and focus group findings and a compilation of these suggestions are included in the following recommendations:

- DNR should examine the current regulatory system to identify opportunities for using incentives for facilitating pollution prevention adoption and promoting environmental performance beyond compliance requirements.
- “Regulatory flexibility” suggestions identified by the survey and focus group related to pollution prevention include:
  - Streamline the permitting process so that permit actions for a pollution prevention modification would receive priority review resulting in faster turnaround time.
  - For facilities that propose pollution prevention changes which may impact several permits (i.e., air and wastewater), have a single point of contact within DNR to facilitate the process.
  - Issue single, multi-media, and facility-wide permits for organizations that demonstrate “superior” environmental performance. Besides reducing redundant report requirements and enabling agencies and facilities to track cross-media shifts, a single permit will foster continuous pollution prevention improvements since only one permit needs to be modified no matter how complex the operational changes.
  - Employ broader, more flexible emissions caps for facilities that have demonstrated environmental leadership. Conventional permitting sets limits on specific pieces of equipment. A cap approach provides facilities the latitude to make changes to their operations that result in pollution prevention since a regulatory limit is set to cover several pieces of equipment or a production process and even at the facility level for groups of pollutants.
- Define up front in an original permit those pollution prevention changes that do not require agency pre-approval or require lesser agency administrative review. The reduced cost of the permit modification approval process provides an incentive for facilities to invest in pollution prevention projects. If the agency and facility, working together to write a permit, can predict what types of pollution prevention changes are certain to be beneficial, the facility can then make those changes faster and according to its own schedule.

### Conclusions

- **Attitudinal barriers and incentives:** For respondents who reported no pollution prevention changes, “management attitude” was tied with “impact on business competitiveness” as the second rated perceived major barrier to pollution prevention implementation.

### Recommendations

- Use of the financial and regulatory incentives previously cited may assist in overcoming attitudinal barriers.
- Testimonials and case studies from businesses that have successfully made pollution prevention changes can be effective mechanisms for persuading management staff at “non-changing” businesses that pollution prevention provides benefits beyond their current perceptions.

### Conclusions

- While lack of recognition was not cited as a barrier, public recognition was perceived by 13 percent of the respondents as an effective incentive for promoting beyond compliance performance.
- In addition, 43 percent of the surveyed businesses that reported making one or more pollution prevention changes view “improved corporate image” as an extremely important factor in pollution prevention decision-making.

### Recommendations

- Consider instituting an annual recognition program for businesses that have made significant pollution prevention changes. Such a recognition program must be well publicized to the general public.
- A recognition program can reinforce existing pollution prevention behavior and may assist in overcoming management attitude within businesses that have not yet embraced pollution prevention.

## INFORMATIONAL/ASSISTANCE RESOURCES

### Conclusions

- The highest rated informational resources are a company’s own employees or research department and the DNR.
- The opportunity to improve pollution prevention resources appears to lie with those who interact with small businesses, particularly businesses with 50 or fewer employees.
- The Internet was rated relatively low for usefulness, especially with small businesses. This could signify that not as many small businesses have access to the Internet, or they may not have the time to access the Internet. This may also signify that the Internet still has untapped potential to reach out to all business.
- Businesses that make multiple pollution prevention changes rely upon or have better access to more informational resources (i.e., vendors and suppliers, trade associations) than those who don’t make changes (Table 5).
- The opportunity to reach large businesses still exists as indicated by 25 percent of larger businesses that do not think the DNR is a useful resource. DNR’s large business assistance program may have the opportunity to improve P2 resources for large businesses.
- While businesses that implement pollution prevention projects may rely upon additional sources for assistance, DNR regulatory staff, particularly in their interactions with smaller businesses, are effective pollution prevention change agents.

## Recommendations

- Talk the language of small businesses by acknowledging their economic issues and, where possible, assist them to calculate the short- and long-term financial benefits of pollution prevention.
- Business assistance providers need to examine ways to disseminate the pollution prevention message to equipment vendors and trade associations, and develop partnerships with these entities.
- When developing an Internet information dissemination strategy, assistance providers must consider that currently, this strategy will likely not benefit small businesses.
- DNR should investigate creative ways to enhance the use of regulatory staff as conduits to pollution prevention assistance programs and services.
- To be most effective in meeting customer expectations, DNR should examine ways to better coordinate and integrate pollution prevention assistance programs and services with environmental compliance assistance activities. This examination should consider:
  - Expanding current regulatory integration initiative with field office inspectors by providing additional sector-specific training on pollution prevention biased / multimedia inspections. Business sectors with small to medium operations should be identified and targeted in this effort.
  - Providing pollution prevention awareness building and integration training for wastewater and air quality permit writing staff.

# Outcome

The outcome of this research supports the pollution prevention regulatory integration initiatives that have been implemented by the Iowa Department of Natural Resources and suggests that these efforts should be expanded into additional projects and regulatory programs. The findings also have inferences to the department's business technical assistance services that support these regulatory activities, specifically in terms of how to better market and deliver these services.



## Appendix

### The Iowa Department of Natural Resources Pollution Prevention Questionnaire

**DATE**                    **TNT.#**                    **PHONE #**

(Name from Sample or if Volunteered)

1 - WATER (Gold) 2 - AIR (White) 30  
PAGE#

CComDanv Name)

**0035**

**IOWA DEPARTMENT OF NATURAL RESOURCES  
POLLUTION PREVENTION SURVEY**

Hello. My name is \_\_\_\_\_ and I'm calling on behalf of the Iowa Department of Natural Resources, or the DNR. We are asking businesses that have air and/or wastewater permits about some environmental issues which may affect their businesses. We need your input to help the DNR know when their services can be most useful and how they can make it easier for you to comply with environmental regulatory requirements. Your individual answers will be treated confidentially and will be reported only in combination with the answers of others.

S1. Who is primarily responsible for environmental permitting and compliance at your business?  
Is it the owner or someone else?

**1 - Owner responsible      2 - Someone else responsible      41**

S2. Are you that person? **Yes (Q.I)**      **No (ASK TO SPEAK WITH THAT PERSON  
AND REPEAT INTRODUCTION)**

1. First, I have just a few questions about your company. How many full-time employees work at your facility? (IF NECESSARY, CLARIFY: "At that location.")

\_\_\_\_\_ **Full-time employees**      50-54

2. Does your facility have a parent company?      Yes\_\_\_ No\_\_\_

3. In what county is your business located?  
(IF NECESSARY, CLARIFY: "Where you are right now.")

\_\_\_\_\_ County

4. What are your company's approximate annual gross sales?  
(IF NECESSARY, CLARIFY: "For the entire company including all locations.")

\$ \_\_\_\_\_

5. Now I would like to ask you about pollution prevention. Please tell me in just a few words what the term "pollution prevention" means to you **as related to your business.**

100-105 \_\_\_\_\_

6. If you think of programs which work like this: instead of managing pollution at the end of the pipe or stack, these programs eliminate or reduce pollution **at the source before it is even created**, prior to reuse, treatment or disposal. What name or term would you use for such an approach?

\_\_\_\_\_

[IF SAY “POLLUTION PREVENTION” OR “DK” ON Q.6, SAY: “From this point on, when I use the term pollution prevention, I mean that instead of managing pollution at the end of the pipe or stack, pollution would be eliminated or reduced at the source before it is even created.”

7. I would like you to tell me about any changes that your business may have made in the past two years to operations or production processes that you would consider related to pollution prevention (or what you call *answer per 0.6* ). For instance, have you... **(ROTATE)**

- 7a. (ASK IMMEDIATELY AFTER EACH “NO,” “DK” OR “NA” [Not **Applicable**] ON Q.7)  
Have you considered making this change?

- (A) Made any process modifications?
- (B) Done any product reformulation?
- (C) Made any substitutions to less toxic materials?
- (D) Made any changes in handling and use of raw materials or other materials?
- (E) Made any equipment modifications?
- (F) Made any changes to cleaning or maintenance operations?

8. Have you made any other changes that you would consider to be related to pollution prevention(or answer per Q.6)?

8.a. (IF YES ON Q.8) What were those changes?

9. Have you considered making any other changes?

9a. (IF YES ON Q.9) What changes have you considered?

[IF NO CHANGES MADE OR CONSIDERED  
PER Q.7, 7a, 8 or 9, SKIP TO Q.12]

(ASK 0.10 AND 11 IF ~YES” ON ONE OR MORE PER 0.7. 7a, 8 OR 9)

10. What was the most important factor influencing your business to make changes or consider changes for reasons of pollution prevention (or *answer per 0.6* )?

11. Now I'd like you to tell me how important each of the following factors were when your business decided to make or consider those changes for pollution prevention (or answer per 0.6 ). Please use a 1 to 5 scale where 5 means extremely important and 1 means not at all important. Of course, you may use any number from 1 to 5. First, how would you rate the importance of... (ROTATE) (RECORD ANSWERS IN RIGHT-HAND MARGIN AND PLACE "0" IN FRONT OF THE NUMBER)

(DK - 06)

- (A) Cost savings?..... 200-201
- (B) Decrease in environmental problems?.....202-203
- (C) Advice from regulatory employees?.....204-205
- (D) Advice from technical assistance providers?.....206-207
- (E) Customer demands for "greener" products?.....208-209
- (F) Product quality improvement?.....210-211
- (G) Improved corporate image?.....212-213
- (H) Improved working environment?.....214-215
- (I) Increased productivity?.....216-217

[AFTER ASKING Q.11, SKIP TO Q.14]

(ASK 0.12 AND.13 IF NO CHANGES MADE OR CONSIDERED PER 0.7. 7a. 8 OR 9)

12. What is the most important factor that would influence your business to make changes or consider changes for reasons of pollution prevention (or answer per 0.6 )?

13. If you were to consider making changes to your operations to prevent pollution (or answer per 0.6 ), please tell me how important each of the following factors would be in your decision-making process, using a 1 to 5 scale where 5 means extremely important and 1 means not at all important. Of course, you may use any number from 1 to 5. First, how would you rate the importance of... (ROTATE) (RECORD ANSWERS IN RIGHT-HAND MARGIN AND PLACE "0" IN FRONT OF THE NUMBER)

(DK-06)

- (A) Cost savings?..... 240-241
- (B) Decrease in environmental problems?.....242-243
- (C) Advice from regulatory employees?.....244-245
- (D) Advice from technical assistance providers?.....246-247
- (E) Customer demands for "greener" products?.....248-249
- (F) Product quality improvement?.....250-251
- (G) Improved corporate image?.....252-253
- (H) Improved working environment?.....254-255
- (I) Increased productivity?.....256-257

**(0.14-23)**

Several resources may be used for information or technical assistance about alternative practices or technologies to address environmental issues. As I read each of the following sources, please tell me if you have found it to be very useful, somewhat useful, or not at all useful as a source of information or technical assistance. First,... (ROTATE Q.14 THRU 23)

**Questions 14-23 (Very, Somewhat, Not at all, DK)**

14. How useful are small business assistance programs?

14a. (IF 'VERY' OR 'SOMEWHAT' ON Q.14) Which one program is most useful?

15. How useful are your company's employees or your own research?

16. How useful are other companies?

17. How useful are university or extension programs?

18. How useful is the Iowa Department of Natural Resources?

18a. (IF 'VERY' or 'SOMEWHAT' ON Q.18) Who specifically at the DNR?

19. How useful are industry trade associations, publications or conferences?

20. How useful are outside consultants or contractors?

21. How useful a resource are vendors and suppliers?

22. How useful a resource are your customers?

23. How useful are Internet resources?

24. My next questions have to do with the role of the DNR. First, is it your expectation that you should be able to get assistance from the DNR with compliance with environmental regulations?

1-Yes            2-No            8-DK

25. Is it your expectation that you should be able to get assistance from the DNR with changing your business processes to incorporate pollution prevention (or answer per 0.6)?

1-Yes            2-No            8-DK

26. Is it your expectation that the DNR should be able to refer you to others who could assist you with changing your business processes to incorporate pollution prevention (or answer per 0.)?

1-Yes            2-No            8-DK

27. Is it your expectation that the DNR should be able to provide you with **both** compliance assistance **and** assistance with pollution prevention (or answer per 0.6)?

1- Yes (Q.28)            2 - No (Q.27a)            8 - DK (Q.28)

27a. (IF "NO" ON Q.27) Why do you feel that way?

(ASK "What other reasons?" UNTIL NO **OTHER** REASONS)

28. Now thinking about any factors which you would consider barriers to initiating or expanding pollution prevention (or *answer per 0.6* ) at your business, what would you say is the most significant barrier?

29. I'm going to name some factors that may or may not relate to your initiating or expanding pollution prevention (or *answer per 0.6* ) at your business. As I read each one, please rate it on a scale of 1 to 5 where 5 means it is a major barrier and 1 means it is no barrier at all. Remember, you may also use any number between 1 and 5. First, how much of a barrier do you consider... (ROTATE) (RECORD ANSWERS IN RIGHT-HAND MARGIN AND PLACE "0" IN FRONT OF THE NUMBER)

(DK-06)

- (A) The current permitting or regulatory system?..... 460-461
- (B) A lack of flexibility for pollution prevention programs within the permitting or regulatory process?..... 462-463
- (C) Lack of knowledge about pollution prevention among regulators?.....464-465
- (D) The attitude of your company's top management toward change?.....466-467
- (E) The attitude of your employees toward change?.....468-469
- (F) The amount of capital to invest in long-range process changes?..... 470-471
- (G) The impact of pollution prevention efforts on the competitiveness of your business?.....472-473
- (H) Return on investments?..... 474-475

30. Using the same scale of 1 to 5, how much of a barrier do you consider the lack of regulatory incentive for facilities to go beyond minimal compliance with the requirements?

(DK=06)

30a. (IF GIVE RATING OF «3,» «4,» OR «5» ON Q.30) What would be the one most effective incentive for regulated facilities such as yours to go beyond minimal compliance with the requirements? What other incentive would be effective?

1st Mention \_\_\_\_\_  
2nd Mention \_\_\_\_\_

Those are all the questions I have. Thank you very much for your time and input.

INT.#

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