myDEQ
Arizona Department of Environmental Quality

Pollution Prevention Facility Assessment

User Guide

Purpose of Document

This guidance document is intended to provide a starting point for conducting a facility assessment at your location with a focus on documenting your processes. Facility assessments are one way to comprehensively document your facility's waste streams and pollution generating activities. This guidance focuses primarily on items that could contribute to pollution prevention (P2) plans. The results of your assessment can be used to find opportunities for improvements by identifying large waste streams and seeing where unnecessary or excessive waste generation is occurring. This can be a good starting point when deciding on how to increase sustainability at your facility.

ADEQ P2 Contacts

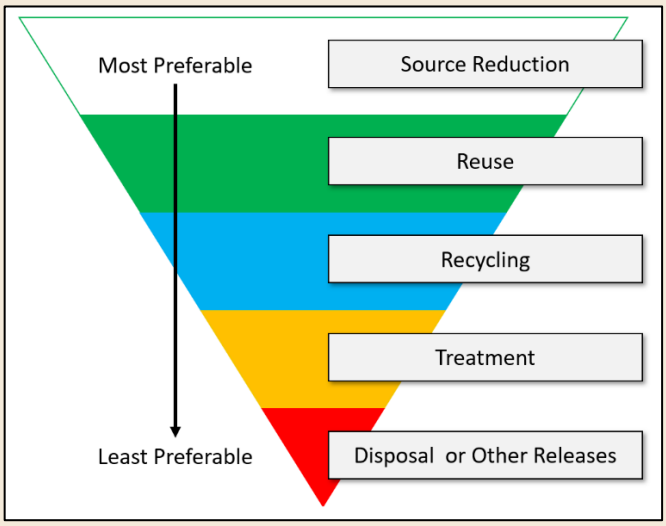
ADEQ's Pollution Prevention (P2) staff are here to help! If you need or want assistance in getting started, doing your assessment, analyzing the information, or in developing new P2 goals, please reach out! Contact us by calling at 602-771-8083 or by emailing **P2@azdeq.gov**.

Directory

What is Pollution Prevention?

Pollution prevention (P2) is the act of reducing your facility's impact on the environment by minimizing pollution generated by your business! ADEQ's specific P2 Program is described in more detail on our website.

The waste management hierarchy ranks waste management methods from most preferred to least preferred. For P2's purposes, there is a heavy emphasis on source reduction. If you reduce the pollution at the source (by eliminating a toxic input or reducing hazardous waste generation), you can most effectively prevent pollution. ADEQ's P2 Program also recognizes reuse, recycling, and conservation of natural resources (water, energy, etc.) as approved P2 techniques.



In Arizona, certain businesses are required to participate in ADEQ's P2 Program while others are encouraged to participate voluntarily. To determine whether you are required to participate go to our website here. Participating in the P2 Program can have many benefits for your facility!

Benefits of P2 for Your Facility!		
Increase sustainability at your facility and reduce pollution impact in surrounding community!	Reduce cost from inefficiencies, hazardous waste disposal, and excess chemical purchasing!	Increase work safety by reducing opportunities for exposure!

Do You Participate in ADEQ's P2 Program?

If you are a participant in ADEQ's P2 Program, conducting a thorough facility assessment of your business makes a fantastic P2 goal for your Amendment! You will choose the "None" goal type, select "Other," and indicate how you plan to conduct a facility assessment. For your Annual Progress Report, you can attach the filled-out assessment to your goal. Additionally, you can attach the final process assessment to the related P2 Process in your P2 Plan to give context to the descriptions you've provided. The more detail you provide, the more P2 staff can assist you in developing new P2 goals!

Using this Guidance Document

In this guidance document, you will find instructions, an example, and some suggested next steps for a process-based analysis. The form is set up to explain how to analyze your processes and provides blank example tables for a singular process. You'll want to create your own tables in Word, Excel or other programs to ensure your analysis is specific to your business and process components.

Process assessments will provide a detailed look into each of your key business activities. We recommend starting at the beginning of your process and documenting your inputs and outputs with as much detail, and as quantitatively, as possible. This helps identify any large waste streams and inefficiencies. After you've identified your processes and documented the inputs and outputs, you'll move onto the next steps which explains how to turn your assessment into sustainability goals!

Tips for Success

You will want to be as quantitative as possible and provide context for the waste streams. For example, if your process produces D008 waste, don't simply list the hazardous waste code. Try to include the pounds of D008 waste generated and the reason for that generation. Additionally, attaching process flow diagrams, maps, or images of the assessment area can benefit your analysis at the end. This will help you choose which waste streams to focus on for sustainability improvements or P2 goals!

Involve multiple staff levels and disciplines during a facility assessment. Forming a team that includes operators, administrative staff, management, and any other groups can provide diverse looks into the facility. Don't limit the team to only environmental staff, either! Include an array of disciplines to get a well-rounded assessment of your facility.

Conduct the assessments at different times and conditions! Assess processes during different operational shifts to identify variations in waste generation. This can result in improved operating procedures. Similarly, assess your streams during operational peaks and lulls to gain a sense of your maximum and minimum waste generations. Track maintenance schedules to identify what waste is associated with these activities. If you've assessed a process or location when it was first implemented, assess it again five to ten years later to see if any inefficiencies have begun to occur due to deterioration!

The assessment can help you input your process information into myDEQ! The process input for myDEQ follows a similar format. The better documented your processes in myDEQ, the higher quality your P2 Plan will be. Additionally, inputting your processes accurately and with detail will increase the ability of P2 staff to provide technical assistance during your future Amendment cycles.

Process Assessment Steps and Instructions

The goal of a process assessment is to take one process, define the inputs and outputs, and then brainstorm potential sustainability improvements. A process is defined as a series of actions or steps taken to achieve a particular end (or product). Inputs are anything that you put into the process (e.g. toxic chemicals, water, electricity, raw materials, etc.) and outputs are anything produced by the process (e.g. hazardous waste, solid waste, wastewater, heat, dust, etc.). You'll want to do a process assessment for all the processes in your facility. However, you will want to do them in an order that makes sense to you based on your facility's prioritization!

This guidance walks you through each step of the assessment and contains blank example tables. While you could build these tables in Word, analysis may be easier in Excel. A filled-out example will be shown for reference. After you've filled out your process assessment, take a look at the Next Steps to read about creating and choosing sustainability goals!

Step 1: Identify Your Processes

Before diving into the details of your inputs and outputs, the first step is to write down every process at your facility. For each of your facility's main products, consider the process attached to it and write it down. If that does not encompass all the activities at your facility, continue listing processes until you believe the list is accurate.

To determine which process to begin analyzing first, use the decision matrix below to rank the processes by a set of impact factors. Rank each factor on a scale of 1 to 5 for each process. The factors in the example matrix are suggestions, and can be changed or added to depending on your business needs or considerations during capital project improvements. While the example table has "Process #" as the title, you should name each process in a specific manner that makes it easy to identify and remember (i.e. Chromium Plating, Metal Cleaning, etc.).

Example Process Decision Matrix

Name	Frequency of Use [a]	Scale of Production [b]	Safety [c]	Last Upgraded [d]	Total Points
Process 1					
Process 2					
Process 3					

a – A process used less than 3 times per year would be ranked a 1 while a daily process would be ranked 5.
b – A process with a small number of outputs would be ranked a 1 while a high-volume process would be a 5.
c – A process with few safety concerns or required safeguards would be ranked a 1, while a process requiring multiple safeguards would be ranked a 5.
d – A process that was upgraded recently (new equipment or practices) would be ranked a 1, while an older process would be ranked a 5.

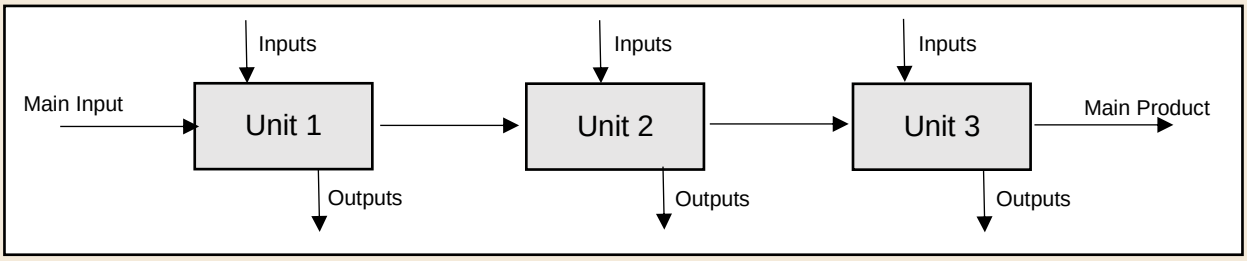
The processes with the highest total points are likely going to be your highest impact areas. Focusing assessments and P2 initiatives on the high impact processes first can be an easier starting point. Starting with clear improvements that are easier to implement can boost morale surrounding P2 initiatives and can help you build the skills that will make it easier to analyze more difficult operations!

Step 2: Break Down your Chosen Process

Once you pick a process to analyze further, your next step is to break that process down into different pieces. Start at the beginning and identify the different steps of your process from first input to last output. At this stage, you can keep your analysis at a high level (excluding minor

intermediates, as appropriate). If you are analyzing a chemical packing process your breakdown may include preparing the tank, preparing the new container, filling container, closing and finishing new package, etc.

Visually draw out the process with the main steps shown as “units” or boxes and your main inputs and outputs identified with arrows coming in and out of the appropriate units. This will create a process flow diagram showing a qualitative overview of your process. Alternatively, you can attach a previously generated process flow diagram, if it showcases inputs and outputs.



Step 3: Quantifying your Chosen Process

Once you’ve created or attached the process flow diagram, develop a table of quantitative inputs and outputs. Name the input or output (i.e. potable water, raw polymer, etc.), indicate the type, the average quantity, and any other notes about it. Those notes could include why that input/output is necessary, composition of the input or output (i.e. D001 waste or wastewater containing heavy metals), or special considerations like production ratios. Below is an example.

Example Input and Output Table

Name	Type	Unit	Quantity	Units	Notes
Input 1	Toxic Substance	Unit 1	32,000	lbs	Required for end product’s quality.
Output 1	Hazardous Waste	Unit 1	10,000	lbs	Produced from disposal of plating bath.
Input 2	Raw Material	Unit 1			
Output 2	Wastewater	Unit 2			

The easiest way to build the table is to start at the beginning of your process and quantify each input and output in the order they appear on your process flow diagram. Try to be as specific as possible to make planning out potential P2 initiatives easier.

Once you’ve filled out the table with all the inputs and outputs from this process, you can sort the information by quantity from largest to smallest. This will show you what the largest pollution generating streams are for this process. Typically, the largest streams will be the easiest place to start implementing efficiency-based improvements, but even the smaller streams can have P2 opportunities!

Step 4: Analyzing the Individual Units

Further analysis on individual units can be done to narrow down specific opportunities for improvements. Prioritize the unit with the largest streams. Create the same table seen in Step 3, but only for that individual unit. Include smaller input and output streams, intermediaries, and add notes specific to this unit (frequency of cleaning, use, appearances, etc.). This level of analysis is often beneficial once you have exhausted your P2 opportunities for the overall

process and need to start fine tuning these goals on a more localized level. This extra analysis can also be beneficial if your process has one unit that generates the most waste. Rather than doing broad updates, you can target that specific unit.

Questions to Ask Yourself About the Process and Units

What safety protocols or equipment is required for the process?	•Substituting an unsafe waste stream for a safer alternative is a great P2 goal and has benefits beyond reducing pollution.
What spill prevention techniques are utilized at this process?	•Assessing your existing spill prevention plan and infrastructure may provide insight into potential improvement projects. Review spills/incidents from the last five years to find a root cause!
What insights do staff have with the process?	•Talk to the staff who work with the process. They may have their own ideas on how to optimize a unit. Goals with minimal impact to staff can often be easier to implement!
When was the last time this process was updated or upgraded?	•Upgrading equipment can result in less leaks and increased efficiency. Industries are constantly evovling, and often the most recent best management practices are the most sustainable.
What administrative tasks are associated with the process?	•Having well trained employees, up-to-date processes, appropriate signage, and inventory controls can reduce waste from human error.
Is the process exposed to stormwater or other elements such as wind or sunlight?	•Exposure to the elements can result in contaminated environmental media or faster degredation of your equipment.
What are some potential P2 improvements that can be made?	•Take a moment to brainstorm some potential activities. You don't need to be specific at this stage, but identify potential ideas that stood out to you during this assessment.

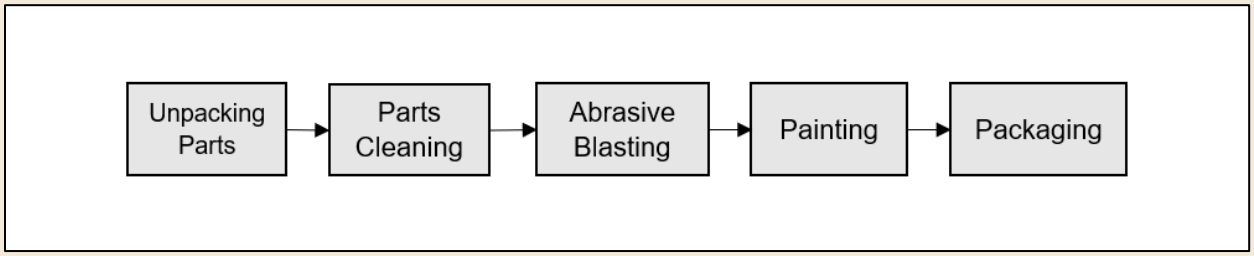
Example Process Assessment

The following is a simplified example of how these tools can be used to analyze your facility's processes. The example is based on a metal facility that primarily focuses on cleaning and painting various metal parts. While using these tools will help you, make sure to take notes on

your observations throughout the analysis and process. This assessment should be used to increase process familiarity and to start conversations within your staff about P2 opportunities.

Step 1 is to write down all your facility's processes and then analyze them in a decision matrix as shown below. From that example matrix, Parts Cleaning and Parts Painting rank the highest. This indicates that those two processes will likely be our impact areas to focus on. Keep in mind that even if a process ranks lowly on the matrix, it may still have great sustainability opportunities!

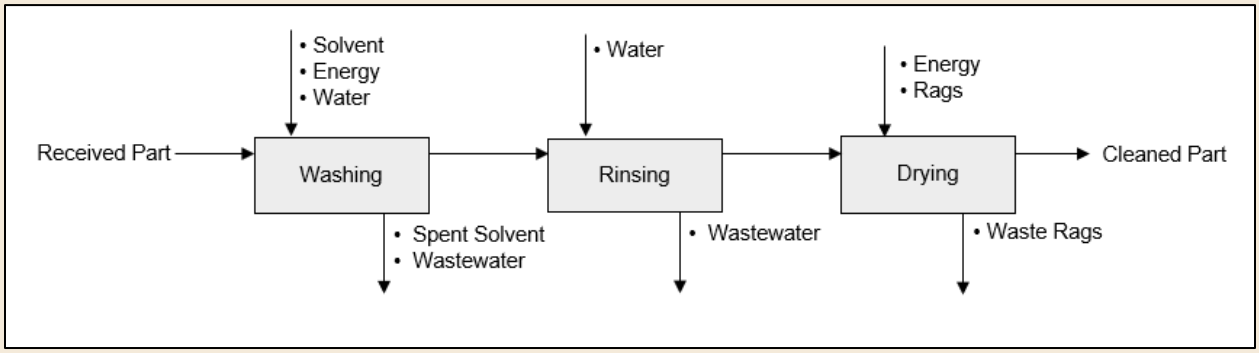
Example Process Flow and Decision Matrix:



Name	Frequency of Use	Scale of Production	Safety	Last Upgraded	Total Points
Unpacking Parts	3	1	1	1	6
Parts Cleaning	5	5	3	4	17
Abrasive Blasting	2	3	4	3	12
Painting	5	5	3	4	17
Packaging	5	1	1	1	8

After choosing the Parts Cleaning process to focus on, start from the beginning of the process and think of the different steps involved. Parts are received, put into an industrial washer, removed from the washer and then dried, if needed. For our industrial washer, we know that we use a solvent-based cleaning fluid and that the machine agitates the parts, which requires energy. When we're finished cleaning, the spent cleaning solution comes out, the machine is rinsed, and the parts are rinsed to get rid of any residual cleaning fluid. Additional energy is used by the dryer as the final step of parts cleaning. This is all captured in the example simple process flow diagram below.

Example of a Simple Process Flow Diagram:



After qualitatively writing down the process, we can list the inputs and outputs and add quantitative values. This is shown in the example input and output table below. For the industrial washer, we know that it takes about 40 gallons of the solvent-based cleaning fluid per part we wash. We can then estimate how much of the input is used annually by multiplying the 40

gallons per part by the number of parts we produced that year. Similarly, the same can be done for the hazardous waste produced after draining the industrial washer. We noted that we aren't sure how much energy is used by the process or individual units. This gap in knowledge should be investigated and filled if you'd like to do energy-centric goals for the process at hand. In the notes section, we've indicated the root cause for why we use certain inputs or why we produce certain outputs. This helps us know what the best mode of action will be to replace or minimize certain pollution streams.

Example Input and Output Table:

Name	I/O*	Type	Unit	Quantity	Units	Notes
Solvent	I	Toxic Substance	Washing	40	Gallons per Part	Needed to remove contaminants from metal. Find number of parts from last year to estimate this.
Energy	I	Energy	Washing Drying	Unknown	kW	Cleaning bath is energized, but unsure of rating – need to contact manufacturer or install submeter for process
Spent Solvent	O	Hazardous Waste	Washing	38	Gallons per Part	After being used to remove contaminants, fluid is dirty.
Wastewater	O	Wastewater	Washing Rinsing	100	Gallons	Generated from parts washing and rinsing

*I/O refers to input or output

After we analyze the process, we decided to not delve too deeply into an individual unit, since this process wasn't very complicated. However, if you have a complicated unit, with multiple inputs or outputs, this would be a good time to do that analysis.

For the overall process, we look at the general questions to ask ourselves and write down some notes:

- Safety wise, the largest concern is the solvent-based cleaning fluid which can cause skin irritation and shouldn't get into the eyes.
- All the spill prevention techniques like secondary containment and catch basins are centered around the cleaning fluid. The non-used fluid is in a container with secondary containment, and when we remove the parts from the basin, the spent cleaning fluid is removed through a nozzle that has a basin below it to catch drips.
- After speaking with the operators that work on the cleaning line, we know that the washers have been known to leak.
- This equipment isn't too old in terms of best management practices, but the machinery hasn't been replaced in over seven years.
- Administratively, the employees are trained on safety regarding the solvent and the standard operating procedure indicates how often to recycle the cleaning fluid before wasting it.
- The Parts Washing line is not exposed to any elements.

Doing a brief brainstorm with the team (which can be done on whiteboards or paper or through general discussion, etc.), we think there are a few clear opportunities for sustainability improvements.

- We could try to find a less toxic cleaning fluid – potentially substituting the solvent-based one for a water or aqueous-based cleaning fluid.
    - Before doing this, we'd need to confirm that those alternatives would still sufficiently clean our parts.
- We could replace the aging equipment with a newer, potentially more efficient, model. This may lower leaks, increase drying efficiency, and lower the required volume of cleaning fluid needed.
    - Replacing equipment may be expensive, however, and would need to be budgeted for.
- We could look into optimizing our current practices and ensure that we only waste the cleaning fluid when it is too dirty to perform adequately.
    - This may be easy to implement by experimenting on how often you can recycle the cleaning fluid prior to the part not being fully cleaned or consistent testing of the cleaning solution for optimal pH.
- Tentatively, we identified that we could optimize when we turn on the cleaning systems to reduce energy usage, but we would need to look into the individual unit's energy usage. We also considered recycling the wastewater produced from cleaning the washing units elsewhere in the facility, but aren't sure if it would meet quality requirements.
    - These are good ideas to have written down, because after we implement the ones we know will work, we can spend the extra time to do this research to achieve additional sustainability goals!

After this, you're ready to move onto the next steps! Take your analysis and brainstorming and begin to turn it into a fully fleshed out sustainability goal.

Next Steps

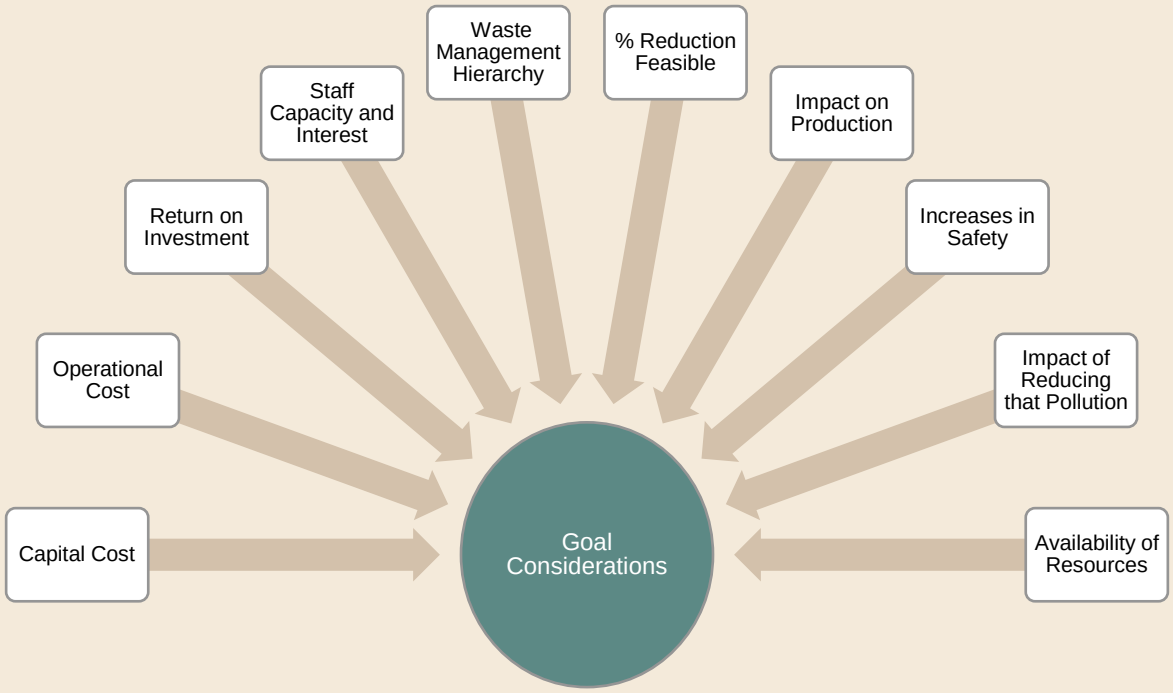
Once you've done the analysis for all your processes, it's time to take that information and start making P2 goals. Organize your data from largest input or output to smallest or from most dangerous input or output to least dangerous. Your largest and/or most dangerous inputs or outputs will be the best places to start trying to identify sustainability opportunities. Highlight observations such as rusting or outdated equipment, areas of disorganization or confusion, and aspects of the processes that have high employee interaction.

Starting with your top input or output, identify the root cause for usage or generation and then identify potential ways to make it more sustainable. Using a tool such as a cause and effect diagram or a 5 why may be beneficial in determining the root cause. See the table below for common opportunities associated with different types of inputs/outputs to get you started.

General P2 Ideas to Consider for Different Inputs/Outputs

Input or Output	Some Potential P2 Avenues
Toxic Substance	• Substitute for a less toxic substance that achieves same quality. • Optimize unit to require less to be inputted.
Hazardous Waste	• Optimize unit to require less waste generation (reduce turnover times). • Add engineering controls to reduce creation of hazardous by-products.
Wastewater	• Recycle wastewater throughout facility. • Pre-treat wastewater to reduce contamination. • Increase unit efficiency to produce less waste for more product.
Air Pollution	• Improve venting and collection systems. • Capture particulate matter to reuse it.
Energy Use or Carbon Footprint	• Install energy efficient lights and equipment. • Install renewable energy or switch from fuel-based equipment to electric. • Create timers and run equipment during off-peak hours (where feasible).
Water Use	• Substitute potable water for recycled water where quality thresholds are lower. • Install water efficient equipment, flow restriction valves, and other engineering controls.
Solid Waste Generated	• Segregate solid waste streams to optimize reuse or recycling potential. • Use materials that are able to be reused or recycled for packaging/other needs throughout facility.
Miscellaneous Concerns	• Replace or upgrade aging equipment. • Implement new inventory or organizational systems. • Interview staff on areas of improvement.

You don't need to limit yourself to goals that are feasible right now. You can create a running list of ideas to expand on in future P2 Plan amendments! Then, it's a matter of determining where you can put resources to improve your processes! For considerations when choosing a goal, see the figure below.



Optimizing your processes will often result in reduced pollution. This can be a great area to begin, if you're new to P2! Process efficiencies should be reassessed every few years to ensure your processes are up to date or in line with new industry standards. When considering the impact of reducing your pollution, consider the safety of the surrounding community (what would happen if there was a release of hazardous waste?), and the conservation of valuable natural resources (reducing impact on the city's water supply or reducing strain on the electrical grid).

Once you have a list of brainstormed P2 ideas for a process at your facility, it's time to choose one to flesh out for implementation. You can put your ideas into a decision matrix to help you decide where the best opportunity is. See an example decision matrix below that can be adapted to suit your business's needs! The considerations and rankings in your decision matrix should be specific to how your business decides what to invest money into. Some facilities may prefer to look at impact to production or capital costs.

Example Decision Matrix

Idea	Return on Investment[a]	Waste Management Hierarchy[b]	P2 Impact[c]	Increase in Safety[d]	Total
P2 Idea 1					
P2 Idea 2					
P2 Idea 3					

a – Return on Investment is how quickly you will profit from the implementation with a 5 being a fast return on investment and a 1 being a slow return on investment.

b – Waste Management Hierarchy refers to where the idea sits on that period with a 5 being source reduction and a 1 being treatment or disposal.

c – P2 Impact is how much impact the idea would have on your facility's pollution output with a 5 being a significant improvement and a 1 being a smaller one.
d – Increase in Safety is how much safety increases for staff with a 5 being a significant increase in safety and 1 being a minimal increase in safety.

After you fill in a decision matrix, look at the scores. These scores should help you in deciding which idea to develop further, but they shouldn't be the end of the decision-making process. As an example, substituting styrene in a process often has a big impact or score. However, finding equivalent inputs to styrene can be difficult and may not be feasible for your business at the time of your analysis. Therefore, while that is a great idea, you may choose to go a different pathway. After choosing your idea, you'll want to start developing the details for implementation. What's the current status and what is your end goal? How will you get there? What technology or previous case studies are there for this idea? Create a game plan to ensure successful implementation of P2!

Even if you choose not to go with a P2 opportunity from this process' analysis, you should keep the analysis and the list of P2 improvement ideas you created. That way, when you've implemented an idea and are ready for a new sustainability opportunity, you can revisit this list and update your decision matrices as appropriate.

Want a Different Perspective?

After you've analyzed the processes you've chosen, some opportunities for sustainability improvements might be easier to identify via a location analysis. This type of analysis tends to be holistic and overarching. It works best for locations without clear processes (break rooms, equipment sheds, loading zones, etc.) and for a general facility overview. Analyzing a location can help identify gaps in inventory management, pitfalls in organization methods, and large-scale projects such as lighting replacements or heating and cooling optimizations.

Need Help?

Reach out to the P2 Program at p2@azdeq.gov for assistance in reviewing your facility assessment and translating your ideas into goals! Take a look at ADEQ's P2 Planning Toolkit for ideas and resources!

P2 Tools & Resources

P2 Tools & Resources

This section contains printable assessment sheets, example assessments, and other P2 resources. The following is a table of link that you may find helpful when completing brainstorming for P2 opportunities:

P2 Resources

Link	Description
P2 Planning Toolkit	Links to resources and P2 tips on various topics
Creating a Successful P2 Program for your Business	Resources and questions to help develop a successful P2 Plan
Green Chemistry	Design chemical processes that are inherently safer for human health and the environment.
Safer Choice	Alternatives to products containing harmful chemicals
ENERGY STAR	Energy efficient products
WaterSense	Water efficient products
EPA P2 Case Studies	Successful P2 case studies
Zero Waste Network	Successful P2 case studies
Pollution Prevention InfoHouse	P2 related publications, fact sheets, case studies and technical reports
TRI P2 Search	Learn how facilities have reduced releases of toxic chemicals to the environment

Location-by-Location Facility Assessment Sheet

Location Name:	Assessor Name: Date:
Location Identification	
Attach a room sketch or a map with this location highlighted.	
What are the key operations occurring in this location?	
Identify key areas or equipment housed in this location.	
Indicate general appearance and organization of the location.	
Toxic Chemicals and Hazardous Waste	
Toxic and Other Chemicals Stored	
Are there satellite accumulation areas? For what?	
Is there a central accumulation area? What's in it?	
What are the chemicals being used for and what is generating hazardous waste in the room?	
Energy	
What's using energy at this location?	
Identify heating or cooling units.	
Type and number of lighting fixtures	
Identify any mechanical energy (crushers, mixers, etc.)	
Water	

Potable Water Used	
Recycled Water Used	
Wastewater Generated	
Solid Waste	
Solid Waste Generated	
Trash and Recycling Bins	
Current streams being recycled	
Air Pollution	
Is there ventilation?	
Particulates Generated	
Fugitive Emissions	
Equipment Using Fuel	
Miscellaneous	
Safety Systems or Equipment	
Signage at location	
SOPs and Forms	
Stormwater Management	
P2 Efforts in Place?	
Potential P2 efforts viable?	
Additional Notes	

EXAMPLE Location-by-Location Facility Assessment Sheet

Location Name: Kitchen Breakroom	Assessor Name: John Doe Date: 1/3/22
Location Identification	
Attach a room sketch or a map with this location highlighted.	
What are the key operations occurring in this location?	Employee lunches and breaks, water stations, company gatherings/parties,
Identify key areas or equipment housed in this location.	Water cooler, sink, trash and recycling bins, refrigerator, appliances, cleaning equipment,
Indicate general appearance and organization of the location.	Somewhat messy, but relatively organized
Toxic Chemicals and Hazardous Waste	
Toxic and Other Chemicals Stored	Cleaning chemicals – 32 oz bottle bleach, dish soap,
Are there satellite accumulation areas? For what?	N/A
Is there a central accumulation area? What's in it?	N/A
What are the chemicals being used for and what is generating hazardous waste in the room?	Chemicals are used to wipe down counters and wash dishes from staff lunches
Energy	
What's using energy at this location?	Refrigerator, toaster and toaster oven,
Identify heating or cooling units.	AC is connected to the room
Type and number of lighting fixtures	3 overhead fluorescents
Identify any mechanical energy (crushers, mixers, etc.)	None
Water	
Potable Water Used	Water cooler is available for staff (30 staff members, ~<2L per person per day), sink used to clean dishes
Recycled Water Used	None
Wastewater Generated	Sink used to pour drinks down and wash dishes (food waste may be in wastewater) – connected to sewer
Solid Waste	
Solid Waste Generated	Food scraps, packaging (plastics/foils), paper, misc. disposals employees bring in.
Trash and Recycling Bins	2 trash bins and a recycling bin
Current streams being recycled	recycling bin is mostly used for drink bottles (plastics), with some cardboard mixed in there
Air Pollution	
Is there ventilation?	No
Particulates Generated	No
Fugitive Emissions	No
Equipment Using Fuel	No

Miscellaneous	
Safety Systems or Equipment	Fire extinguisher, sprinklers,
Signage at location	Company bulletin board w/ HR protocols and company initiatives
SOPs and Forms	Some cleaning protocols
Stormwater Management	None
P2 Efforts in Place?	Recycling bins, towels available to reduce paper towel usage,
Potential P2 efforts viable?	Creating signage for recycling bins, composting, special waste collection for staff (e-waste), reusable water bottles
Additional Notes	Could use bulletin board to post info about P2 efforts and encourage staff to submit ideas here

Process Assessment Sheet

Process Name:	Assessor Name: Date:

Process Flow:

Name	I/O	Type	Unit	Quantity	Units	Note

What safety protocols or equipment are required for this process?	
What spill prevention techniques are utilized at this process?	
What insights do staff have with the process?	
When was the last time this process was updated or upgraded?	
What administrative tasks are associated with the process?	
Is the process exposed to stormwater or other elements such as wind or sunlight?	
What are some potential P2 improvements that can be made? See the P2 techniques table for	

P2 Example Opportunities

Category	Techniques
Operating practices	− Improve maintenance scheduling and/or recordkeeping − Change production schedule to minimize equipment and feedstock changeovers − Test chemicals prior to tossing − Change from small containers to bulk containers to minimize discarding of containers − Ensure all raw material is removed form containers before discarding − Segregate hazardous wastes from non-hazardous wastes − Provide signage for best management practices near place of work
Inventory Control	− Institute procedures to ensure that materials do not stay in inventory beyond shelf life. − Standardize first in, first out use of materials − Implement need-based purchasing − Create a clearinghouse to exchange materials that would otherwise be discarded − Determine if any local facilities will take expired materials for use in their process
Spill & Leak Prevention	− Improve storage or stacking procedures − Improve procedures for loading, unloading, and transfer operations − Install overflow alarms or automatic shutoff valves. − Install vapor recovery systems − Implement an inspection or monitoring program of potential spill or leak sources − Invest in leak detection equipment − Submeter various sections or equipment and track usage to identify abnormalities
Process Modification	− Institute recirculation within a process − Modify equipment, layout, or piping to minimize material travel − Use of a different process catalyst to incorporate less harmful chemicals or reduce energy usage − Institute better controls on bulk containers to minimize discarding empty containers. − Substitute process chemicals with inherently safer options
Product Modifications	− Modify design or composition of product − Modify packaging to reduce material usage − Implement reusable packaging to be returned by customers − Offer alternatives to customers that are inherently safer to human health and the environment
Energy Conservation	− Purchase of more efficient equipment − Switching to LED lighting − Adjusting burners for optimal air/fuel ratio − Use of heat exchangers to make use of waste heat − Insulate heating or cooling lines − Use of variable frequency drive (VFD) pumps − Turning off equipment/lighting when not in use and/or off-hours.
Water Conservation	− Minimize water usage during rinses − Reuse of water where possible, such as a pre-rinse prior to using fresh water − Use of high pressure, low flow nozzles − Installation of aerators to reduce water flow − Purchase of more efficient equipment