



Pathogen Environmental Monitoring Programs: Preliminary Steps

Preliminary Steps

- Form a team
- Map the facility
- Observe traffic and product flow
- Establish hygiene areas
- Review cleaning/sanitation
- Adjust if necessary



There are several preliminary steps you should review when establishing a Pathogen EMP.

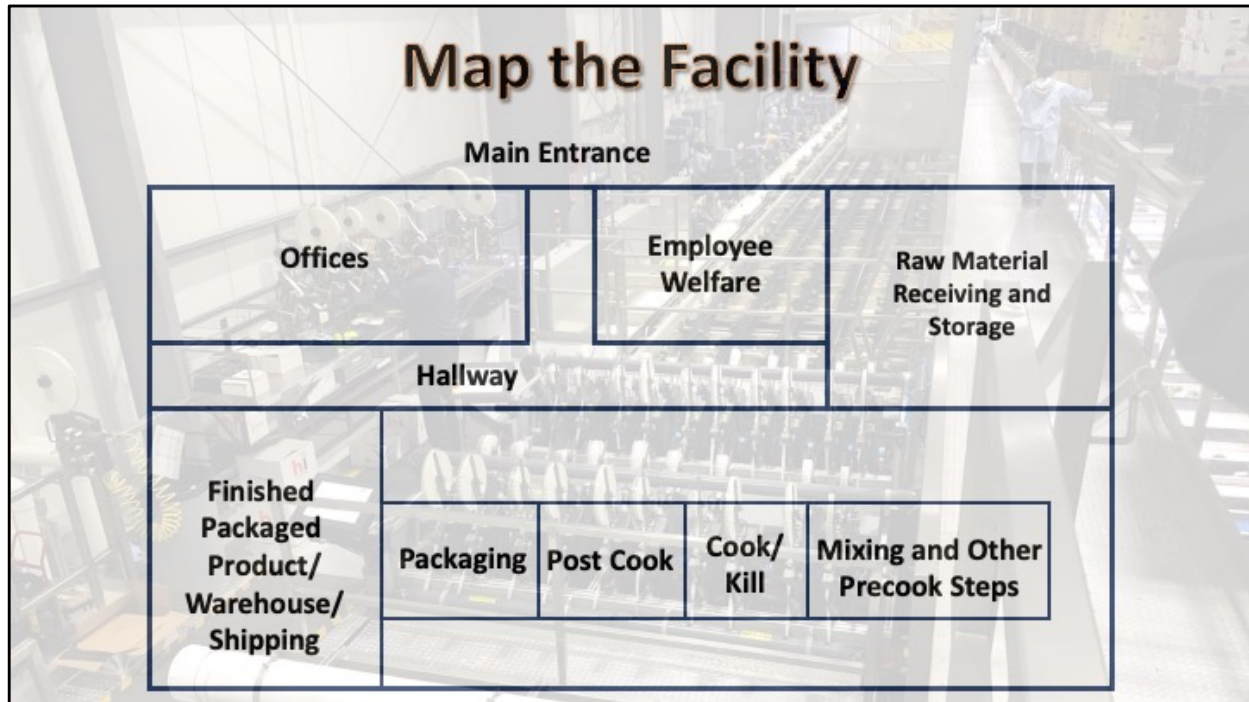
The first is to gather a team that has the PEMP as a goal. In the preliminary phases this group will map the facility, observe traffic and product flows, establish hygiene areas, review cleaning and sanitation programs and provide recommendations for adjustments as appropriate or necessary.

Form a Team

- **Members**
 - Sanitation
 - Quality Assurance
 - Production
 - Maintenance
 - Consultants



The team or committee that is tasked with establishing the Pathogen EMP should be made up of members with diverse expertise. Examples would be sanitation, quality assurance, production, and maintenance. This might be a challenge for smaller processing facilities with fewer specialized employees. But the overall objective is to bring together people with different experiences and expertise with the food product and the process in question. In some cases you might want to engage outside consultants who specialize in establishing these types of programs.



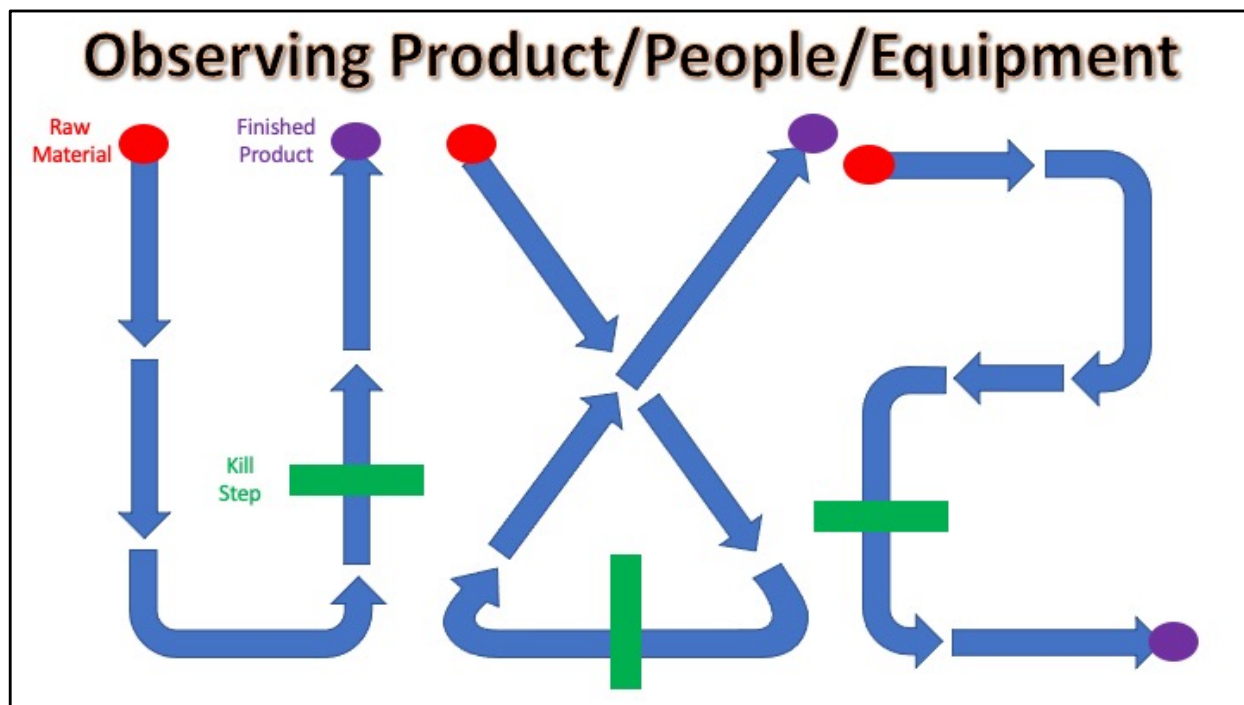
The team should establish a map of the facility if one does not already exist. The diagram here is a simplified mockup of a facility map. It includes all of the key processing areas as well as the surrounding features such as hallways, offices, lunchrooms, restrooms and warehouse. Although not shown here, you will want to identify walls and openings where equipment or people move from one area to the other in order to visualize product flow and traffic patterns.

Observe

- Evaluate process/equipment/personnel flow
- Identify recontamination threats



It is important to verify your map with the team. You should observe the flow of processes/equipment/and personnel through the facility as product is being made. This step will help to identify areas that might provide an opportunity for contamination or recontamination of your product.



These cartoons provide an example of various types of product flow that you might encounter in a food processing facility. In these examples the red oval represents the raw material, the green bar the kill step and the purple oval the finished product prior to packaging. In the first example the finished product runs parallel to the raw material. In the second case the finished product crosses over top of the raw material line. The third example is a little more linear with greater distances between the raw materials and finished product.

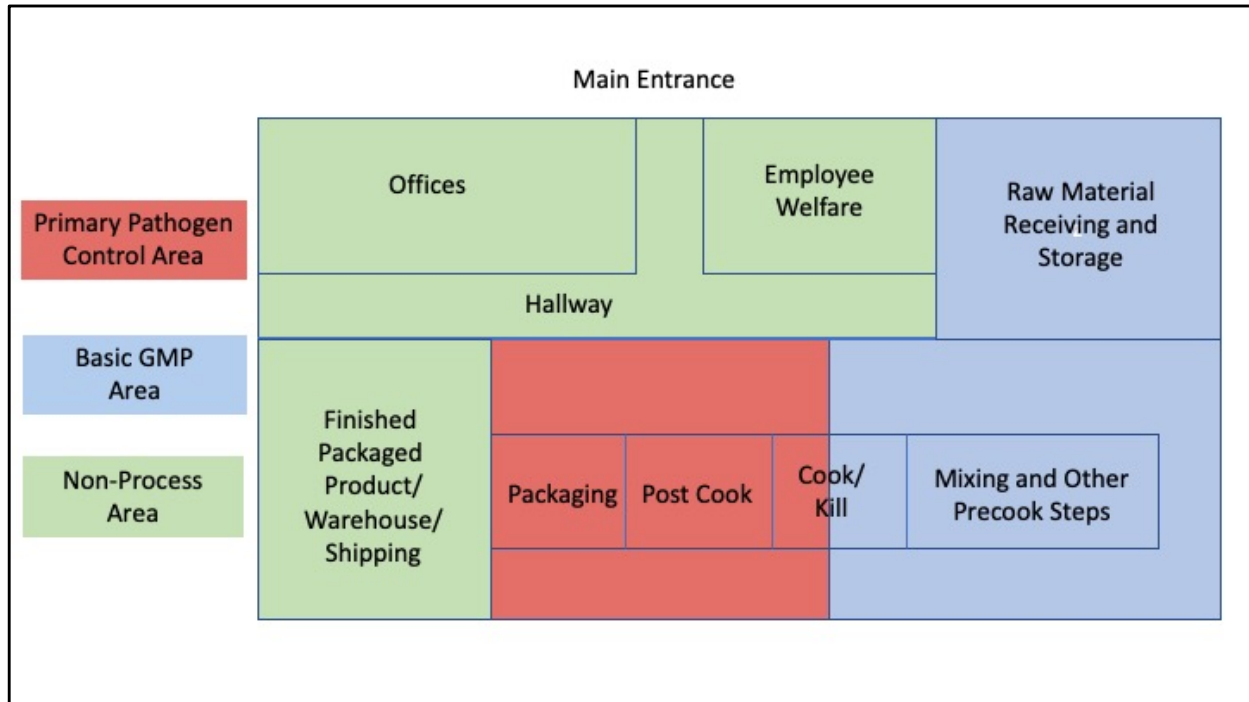
In each of these examples there is potential for cross contamination between the raw and finish product lines. The structure of the facility, the location of walls or doors, direction of the flow of people and equipment will determine the opportunities for movement of microorganisms from the raw side to the exposed finished product. You should critically evaluate movement from the raw side to the post cook area taking into consideration ingredients and finished product as well as people including sanitation and maintenance crews and movable equipment such as carts and fork lifts.

Establish Hygiene Areas

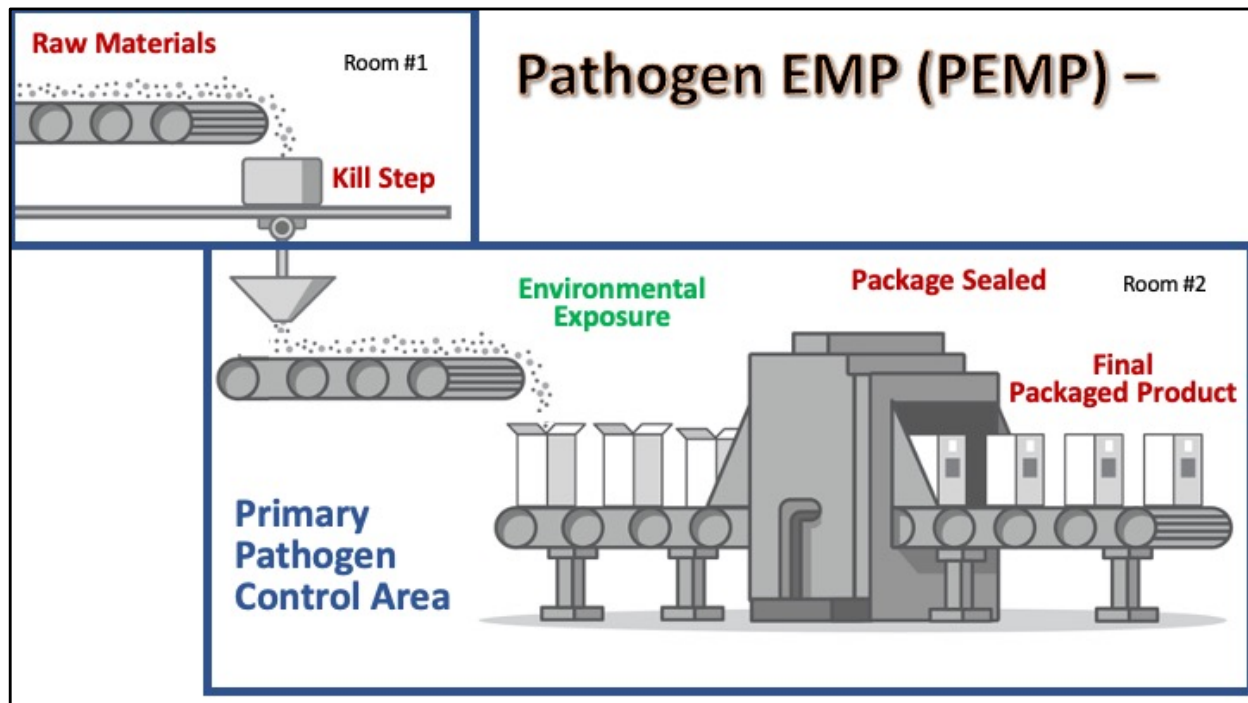
- Non-processing area
- Basic GMP Area
- Primary Pathogen Control Area



The next thing you want to do is define hygiene areas. These are typically classified as *non-processing, *basic Good Manufacturing Practices or GMP, and *Primary Pathogen Control Areas. This will help you focus your program where it matters most.



You will overlay those hygiene areas on your facility map. The non processing areas are shown here in green and including offices, a hallway, the restrooms and breakroom as well as the finished product warehouse and shipping area. The blue indicates the basic GMP area that includes raw material receiving and storage, mixing, and then the raw material entering the cook step. In the simplified example here the cook step has an entry point for raw material in one room on one side of the wall and an exit point for finished product on the other side of the cook step in a different room. The room where cooked product is exposed up to and including packaging is the primary pathogen control area shown in red.



This cartoon corresponds to the map on the previous slide. The raw materials are mixed together and a kill step is applied. The finished product exits the cook or kill step into a separate room where it is exposed to equipment surfaces and the processing environment before the package is filled and sealed. After sealing, no further kill step is applied. In this example The Primary Pathogen Control Area is the area or room of the facility where the cooked treated product is exposed to the environment.



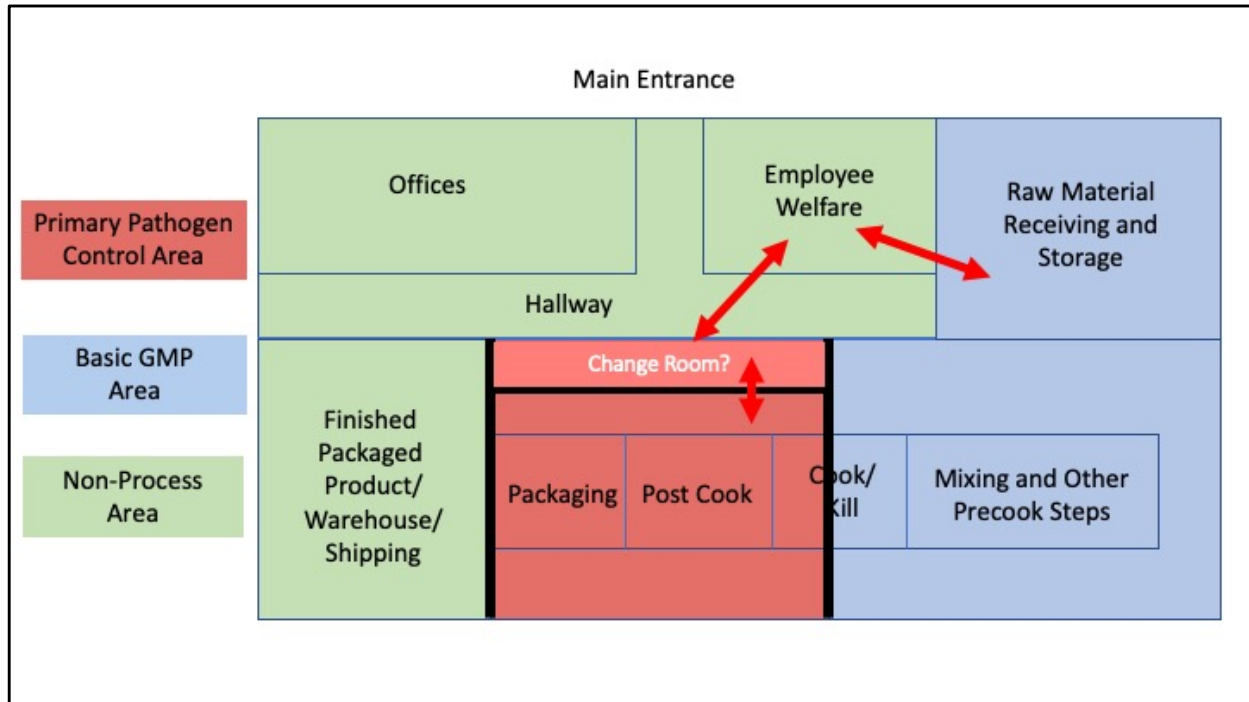
The next step is to establish cleaning, sanitation, and sanitation monitoring plans for each area – preferably in writing along with appropriate documented training programs. The type and frequency of cleaning and sanitation will likely differ in each of your areas.



Preliminary Steps

- Map the facility
- Observe traffic and product flow patterns
- Establish hygiene area
- Review cleaning, sanitation and monitoring plans for each area
- **Adjust if needed where appropriate/possible**
 - Restrict access between areas
 - Modify cleaning/sanitation programs
 - Dedicate equipment to the critical hygiene area

After these preliminary steps the team should review their findings. At this point the team may decide that some adjustments or modifications are necessary before proceeding with planning the PEMP. For example, changing work flows to restrict movement between different hygiene areas, modify cleaning or sanitation programs, or dedicate specific equipment in the primary pathogen control area.



In this hypothetical example the facility added an additional room that is restricted to dedicated employees entering the Primary Pathogen Control Area and allows for change of clothing, shoes, and handwashing prior to entering this area. They made this change after observing employees moving between the basic GMP and Primary Pathogen Control Areas and were concerned about an elevated risk of cross contamination to the finished product.

Summary

- **Preliminary steps for establishing a PEMP**
 - Identify a team assigned to the task
 - Map the facility
 - Observe traffic and product flow
 - Establish hygiene zones
 - Adjust if necessary
 - Review cleaning/sanitation programs

The preliminary steps outlined here provide a solid foundation for a successful Pathogen Environmental Monitoring Program. If you are building your program on top of strong Good Manufacturing Practices that include targeted cleaning and sanitation programs much of this work will already have been done. If not, you may want to pause while you address some of these issues before proceeding to developing and implementing a PEMP.



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