Prerequisite Programs

Yes, but take away the rodent droppings and the occasional shared of glass, and you've still got a damn fine product!

Why Have Prerequisite Programs

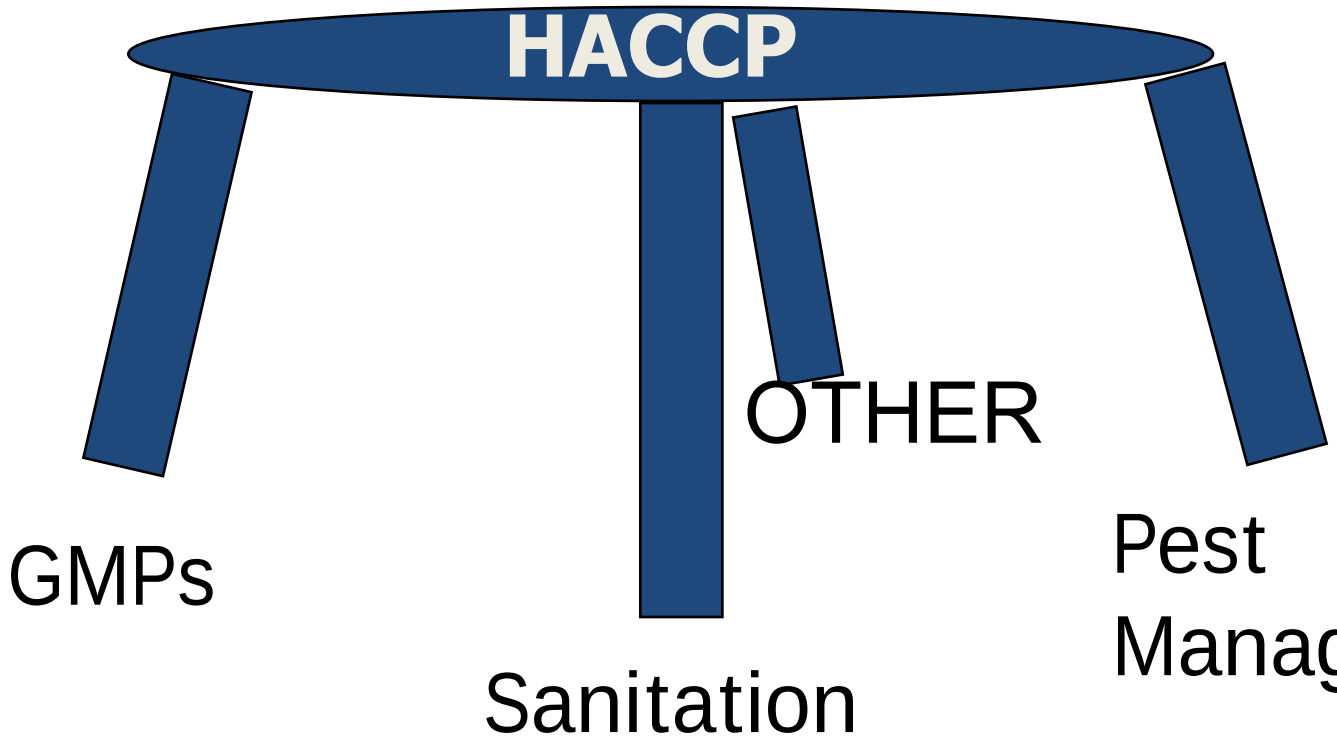
PREVENT PRODUCT ADULTERATION.

Prerequisite Programs

- Good Manufacturing Practices (GMPs)
- Sanitation Programs
  - In FSIS-inspected plants
    - Sanitation SOPs (SSOPs)
    - Sanitation Performance Standards
  - Pest Management Programs
- These programs support HACCP

  so they're called "Prerequisite Programs"

Relationship between HACCP & Prerequisite Programs



Programs to Insure Preventive Controls are Carried Out Adequately

- Training programs for managers and/or workers.
- Audits
- Written records,
- Validation of control measures
- Written sanitation SOPs
- Food label review and control program
- Testing of
  - in-coming raw materials,
  - in-process materials,
  - finished products

Why Have Food Safety Programs?

- Adulteration
  - "Prepared, packed, or held under insanitary conditions whereby it **may** have become contaminated with filth, or whereby it **may** have been rendered injurious to health"

Good Manufacturing Practices

GMPs

GMPs Defined

- Practices followed in manufacturing which are designed to prevent mistakes or accidents
- The main aim is to prevent
  - microbiological,
  - chemical, or
  - physical contamination

  of the finished product

GMPs – Management Responsibilities

- Furnish & maintain
  - A safe & clean work environment
  - Safe equipment & tools
- Establish & enforce work rules & conduct.
- Ensure supervisors have the competency to promote good sanitary practices

GMPs – Management Responsibilities

- Conduct sanitation & personal hygiene seminars
- Post signs (multilingual) to remind personnel & reinforce good practices
- Assign supervisors (not QA!) to monitor work-area entrances

GMPs Include

- Equipment selection & maintenance
- Plant environment
- Water sources
- Operational practices
- Storage procedures
- Protective equipment

GMPs Include

- Personnel Apparel
  - Exposed jewelry
  - Fingernail polish or artificial fingernails
  - Loose items in top pockets
  - Use of hair and beard nets
  - Footwear
  - Outer clothing

GMPs

- Employee personal hygiene
  - Eating
    - Chewing gum
    - Drinking
  - Using tobacco
  - Hand tools

GMPs

- - Personnel Health
  - Disease control
    - Diarrhea or vomiting
    - Contagious diseases (including bad colds)
    - Open sores
- Hand washing & sanitation

THE FAR SIDE

GARY LARSON

GMPs – Hand Hygiene

Pathogens & Hands

- Carriage varies with task
  - 12% of food workers + for *Listeria*
    - (11/12 washed hands inadequately)
  - *Salmonella*
    - on hands of 70 to 100% of slaughterhouse workers

GMPs – Hand Hygiene

- Proper hand-washing techniques
  - Use warm water & lather well for a minimum of 20 seconds
    - Typical duration < 10 sec. of hand washing
    - Remove **some** transient flora
    - Typically not resident organisms
    - Can remove 1.5 logs *E. coli*
    - May not remove all pathogens
  - Wash hands ASAP after contamination or efficacy drops

GMPs – Hand Hygiene

- Gloves & Food Handling
  - Gloves
    - RTE products
    - Protect the product
  - Wash BEFORE gloving
    - microbes will multiply inside warm, moist glove
  - Task segregation
    - A food handler must not handle trash

GMPs - Hand/glove dips

- Hand/glove sanitizing stations
  - Locations
    - outside
      - restrooms
      - break rooms,
      - entrances to processing areas
    - throughout RTE processing areas
  - Contain a properly formulated solution of sanitizer
    - Sanitizer strength monitored

Sanitation

SSOPs

SOPs

- ✓Written
  - ✓Specific
  - ✓Step by step
  - ✓Sufficient detail
  - ✓Use descriptive action word
    - Active
      - Apply warm detergent solution (105 – 120 f) and scrub to remove soil
    - Passive
      - Warm detergent solution (105 – 120 f) will be applied and the equipment scrubbed.

SOPs

- ✓ Useable
- ✓ Monitored
- ✓ Documented
- ✓ SOP Name
  - ✓ use code or number
- ✓ Identify the scope of the SOP
- ✓ What specifically is covered?

WHAT TO INCLUDE

- Detailed descriptions
- Specified frequency
  - Timing
- Sequence
- Identify the employee
  - Task specific?
  - Supervisor role

WHAT TO INCLUDE

- Materials used where appropriate
- Descriptions of corrective actions
- Daily maintained records
- Safety or health considerations
- Expected outcomes

Sanitation's SSOPs

- Integral part of every food process
- A fundamental requirement under the law
  - Mandated by USDA & FDA

9 CFR 416

All meat and poultry establishments are required to develop, maintain, and adhere to written sanitation standard operating procedures.

21 CFR 120.6

- Each processor shall have and implement a sanitation standard operating procedure (SSOP) that addresses sanitation conditions and practices before, during, and after processing. The SSOP shall address the 8 key areas of sanitation

Eight Key Sanitation Conditions & Practices

1. Safe Water
2. Food Contact Surfaces
3. Prevent Cross-Contamination
4. Maintain Hand washing & Toilet Facilities

Eight Key Sanitation Conditions & Practices

5. Protect Food from Adulterants
6. Proper labeling, storage & use of toxic compounds
7. Employee Health Conditions
8. Exclusion of pests

Sanitation's Place in the Food Industry

Unsanitary facilities +

Poor food handling practices +

Poor personal hygiene =

Bacterial contamination and growth

SSOPs:
Roles & Responsibilities

Government Regulatory Agencies

- Inspectors will not permit operation of plant under insanitary conditions

- Regulatory action will be initiated in plants not having or following SSOPs

SSOPs: Possible Components

- “Dry clean-up” procedures
- Equipment break-down procedures
- Cleaning instructions for equipment

SSOPs: Possible Components

- Identify appropriate
  - cleaners & sanitizers,
  - concentrations,
  - contact times
  - rinsing requirements
  - directions for preparation
  - criteria for discarding used solutions

SSOPs: Possible Components

- Condensation
  - Monitoring
  - Removal
- Preparation for clean-up

Selecting The Proper Cleaner and Sanitizers

Consideration for Cleaning Solutions

- Choice of cleaner influenced by
  - Type of soil
  - Organic load
  - Water
    - Temperature
    - Hardness
    - pH value

Consideration for Cleaning Solutions

- Types of cleaner
  - Alkaline foams
    - fats
  - Acid foams
    - Remove inorganic soil or scale, mineral deposits, or rust
  - Sequesterants/suspending agents
  - Combination cleaner/sanitizer products
    - Usually less effective than cleaner & sanitizer applied separately

Consideration for Sanitizers

- **Steam or 180°F water** (temperature must be measured at the surface which is to be sanitized)
  - + Broad-spectrum sanitizer
  - + Somewhat effective in removal of fats
  - – Expensive (cost to heat water)
  - – Burn risk to personnel
  - – Difficulties in maintaining temperature at equipment surface **(need 10+ seconds)**
  - – If cleaning is inadequate, risk of biofilm formation
  - – Lots of condensation
  - – “Cooking” RTE equipment

Consideration for Sanitizers

- **Chlorine**
  - \+ Inexpensive
  - \+ Rapid-acting (~ immediate)
  - \+ Broad spectrum (including spores)
  - – Inactivated by organic matter
  - – Dissipates rapidly
  - – No residual
  - – Corrosive
  - – Carcinogenic breakdown products
- Good for: routine sanitization of clean equipment & surfaces when used in a rotation program with other sanitizers

Consideration for Sanitizers

- **Iodophors**
  - + Relatively inexpensive
  - + Rapid-acting (~ immediate)
  - + Short-term residual activity (hours)
  - + Relatively insensitive to organic matter
  - + Non-corrosive
  - + Dissipates slowly
  - – Discolors some materials
  - – Incompatible with wastewater treatment systems
- Good for: hand dips, boot dips

Consideration for Sanitizers

- **Quaternary ammonium compounds (“quats”)**
  - \+ Insensitive to organic matter
  - \+ Non-corrosive
  - \+ Residual activity
  - – Expensive
  - – Slow-acting (many common quats need a minimum of 15 to 30 minutes contact time)

Quats

- Good for:
  - Periodic use on equipment when used in a rotation program with other sanitizers
  - Foaming onto walls, ceilings, & other non-food contact surfaces
  - Fogging
  - Killing mold

Consideration for Sanitizers

- Specialty sanitizers
  - Acid-based
  - Hydrogen peroxide-based
    - Good at inactivating spores
    - Environmentally safe (breaks down to oxygen & water)
    - Assists in residue removal

Consideration for Sanitizers

- Peroxide combinations (e.g. Oxonia active)
  - Environmentally safe (breaks down to water, oxygen, and acetic acid)
  - Assists in residue removal
- Chlorine dioxide chemistry (e.g. Oxine)
  - Expensive
  - Stable
  - Insensitive to organic matter
  - Non-corrosive

Consideration for Sanitizers

- Maximum permitted use levels on food-contact surfaces without rinsing
  - Chlorine: 200 ppm
  - Iodophors: 25 ppm
  - Quats: 200 ppm
- Higher levels may be used
  - On non-food contact surfaces
  - If rinsed after contact time passes
- Monitor sanitizer concentration

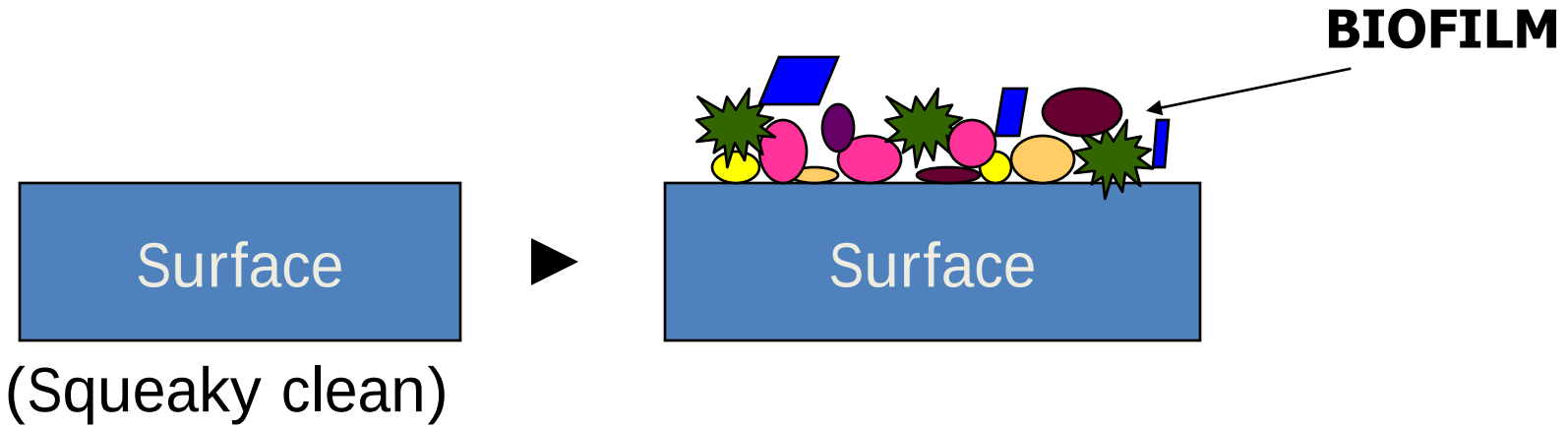
Special Problems – Sanitation

- Equipment
  - Grease-packed bearings
- Construction
  - Difficulty in disassembly
- Cleaning aids (scrubbies, etc.)
  - Should not be swapped between rooms (especially Raw & RTE areas)

Special Problems – Sanitation

- Biofilms
  - Resistant to sanitizers
  - Mechanical action + detergent + warm water necessary for removal
  - May result from improper cleaning practices
  - May harbor pathogens & sporadically “seed” equipment and/or product with pathogens

Biofilm = Food gunk + Minerals + Bugs



(Squeaky clean)

= **Mineral (Iron, Calcium)**

= **Microorganisms**

= **Food debris**

Biofilm is a prime *Listeria* hiding place!

Pest Management

To be effective, must go beyond
Pest *Control*

to

Pest *Management*

Pest Management

- Should be:
  - Preventive
  - Based on Integrated pest management philosophy
  - Administered by a licensed, certified, reputable Pest Control Officer on a regular basis
  - Included under GMPs or Sanitation program
  - Well documented

Pest Management Goals

- Prevent contamination
  - by pests
  - chemicals used in their control
- Keep pests out of the facility
  - deprive pests of food, water, and shelter

Pest Control Officers

- Licensed, certified & reputable PCO
- Regularly-scheduled service
  - Should assess situation & recommend an Integrated Pest Management approach
  - Works when food is NOT being prepared
  - Provides emergency service

Pest Control Officers

- Ask about
  - Professional memberships
  - Ongoing education/training
- Insure he insures his work
- Plant personnel accompany PCO

Common Pests

- Main concern is carriage of pathogens
- Cockroaches
  - Can live up to 2 years
  - Leave signs of infestation
- Flies
- Other insects (including moths, ants, beetles)
- Rodents
- Birds
- Other animals (e.g. cats, snails)

Major Causes of Pest Problems

- Poor
  - housekeeping practices
  - garbage handling & disposal practices
  - maintenance of buildings & grounds
  - food storage practices
- Incoming materials & supplies

Pest Prevention Measures

- Store food & supplies properly
  - 6 inches off the floor & 6 inches away from the wall
  - humidity of dry storage areas at 50% or less
  - Rotate stock & practice FIFO (First In, First Out)
- Dispose of cleaning water
- Clean & sanitize operation thoroughly

Pest Prevention Measures

- Maintain building & grounds
  - Periodically clean & sanitize dumpsters

Pest Prevention Measures

- “Insect attractors”
  - Install in proper location
    - At least 5 feet from food preparation areas
    - 3 to 5 feet above the floor
    - insects’ flight path
  - Devices retain insects
    - clean regularly
    - Splatter can spread pathogens
  - Check bulbs regularly

Use of Pesticides

- No substitute for good sanitation & facility maintenance
- Pesticides are a potential hazard & their use is regulated
  - Have certified PCO do application
  - Usage records must be kept
- Store pesticides in original containers in a locked cabinet separate from cleaners & sanitizers

Pest Management Documentation

- Current copy of PCO & contractor certification
- Map of rodent stations, bait stations, insect zappers
  - Periodically audit against reality

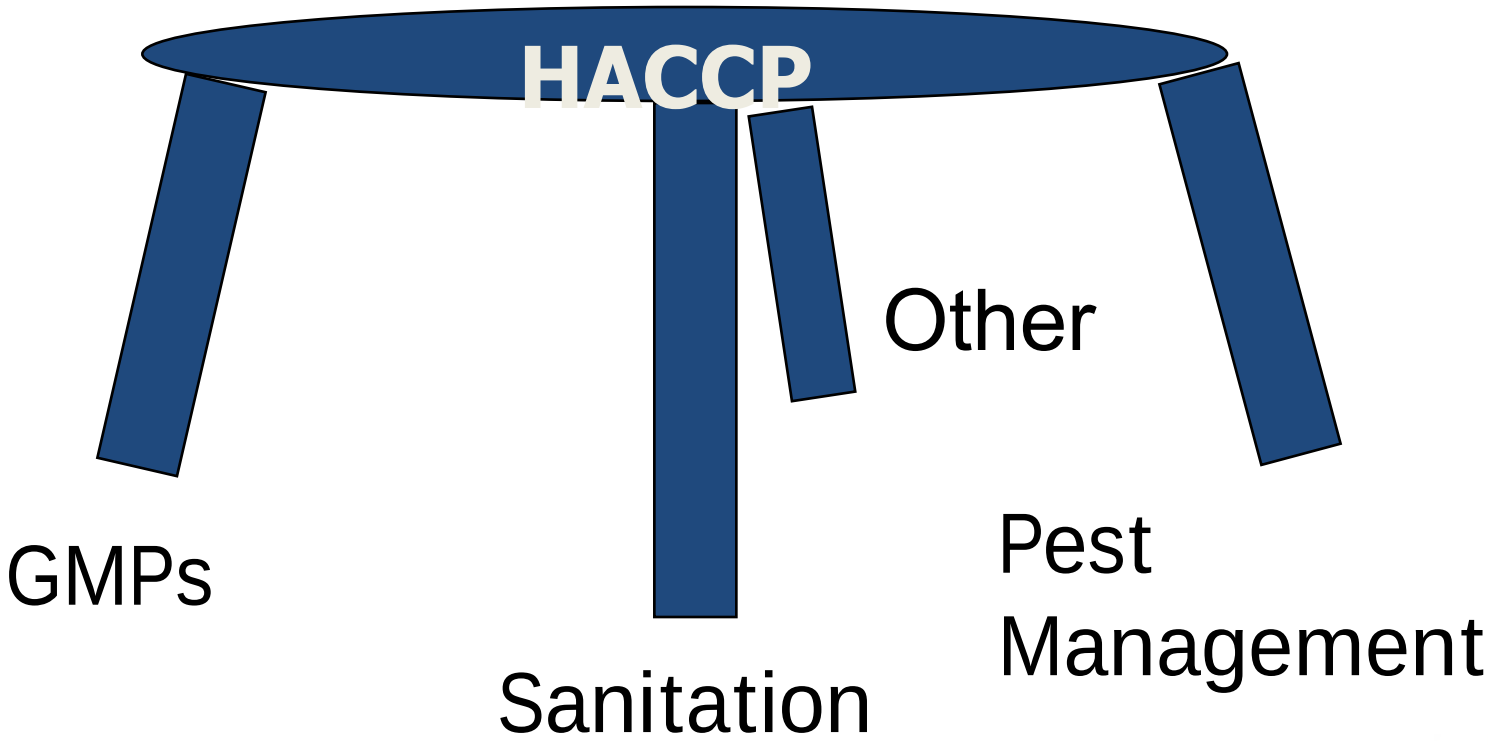
Pest Management Documentation

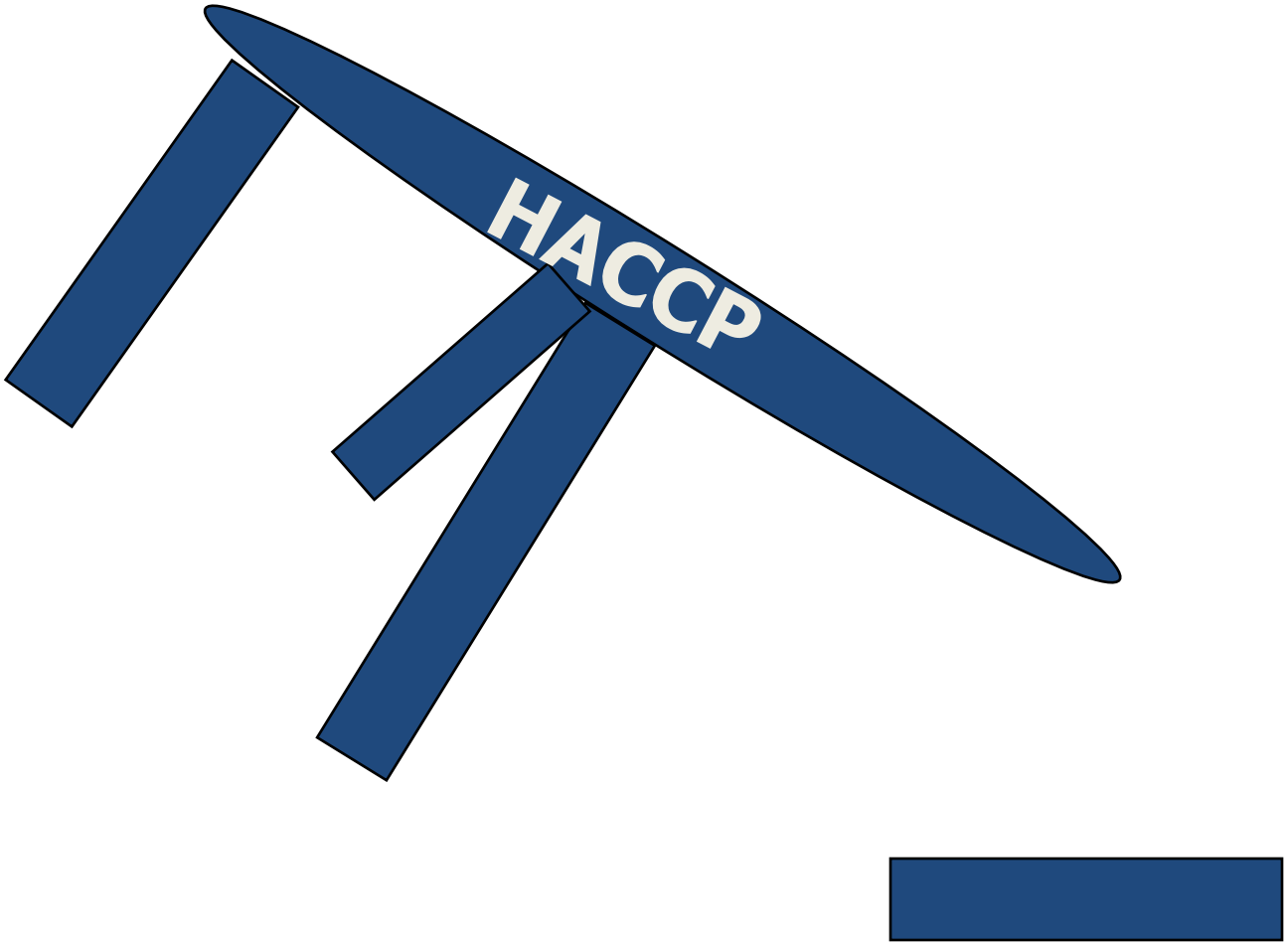
- Maintenance schedule for stations, attractor bulbs, etc.
- If pesticides permitted to be stored on site
  - List & inventory of pesticides with labels & MSDS
  - SOP for pesticide application by in-house personnel (if permitted)

Pest Management Documentation

- Report of PCO inspection findings & Corrective Actions
- Report of in-house inspections or pest sightings with Corrective Actions
- Report of physical assessment of the plant & Corrective Actions

Relationship between HACCP & Prerequisite Programs

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