GOOD HOUSEKEEPING IN VCO MANUFACTURING

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Introduction

It is evident from a number of Cleaner Production (CP) case studies that good housekeeping is an effective strategy for minimizing waste generation in industrial activities. Very often CP options generated during many industrial CP audits belong to good housekeeping category. Good housekeeping is an easy and low cost method for reducing operational cost. Good housekeeping practices are procedural, administrative and institutional measures that a business can adopt with the aim of preventing waste and pollution. These practices are often simple common sense that focuses more on the human side of business operations rather than the technological side. These good business practices generate less waste by making existing processes more efficient. Therefore, it is important that a company reassesses its housekeeping practices regularly because much money and resources are wasted due to lack of care or ignorance.

Exercising good housekeeping practices often requires no capital cost and usually entails implementing simple changes that results in reduced emissions, wastes, operational costs and increased productivity as well as increased workplace safety. Good housekeeping practices in an industry also contribute to:

- Preventing accidents and fires,
- Reducing disposal costs,
- More effective use of space within the work place,
- Better hygienic conditions leading to improved health conditions, and
- Reduced operation and handling time.

Good housekeeping involves every phase of industrial operations and should apply throughout the entire premises, indoors and outdoors. It is more than mere cleanliness. It requires orderly conditions, the avoidance of congestion, and attention to such details as an orderly layout of the whole workplace, the marking of aisles, adequate storage arrangements, and suitable provision for cleaning and maintenance.

Good housekeeping is also a good advertisement for the industry. Customers and clients have more confidence in an organization where their work being carried out efficiently in clean, pleasant, and well ordered surroundings. There is an even more important reason why good housekeeping matters: it makes the undertaking a safer place to work in.

Good Housekeeping Practices

Good housekeeping practices can be implemented through various initiatives, namely:

1. **Training and awareness;** by providing training to employees in proper equipment operation and maintenance, how to minimize material losses during accidents, how to detect and minimize material losses to air, water and land. Awareness raising should highlight the economic and environmental impact of waste generations and disposal.

2. **Preventative maintenance program**; this involves maintaining a complete preventative maintenance schedule to ensure that maintenance problems do not go unchecked and become bigger problems than necessary.
3. **Waste segregation**; this is done by preventing mixing of hazardous waste with non hazardous waste, segregation of high with low strength waste or with runoff (to reduce disposal costs), storing materials in compatible groups and isolating liquid waste from solid waste.
4. **Effective supervision.** Top Management need to show their commitment and support to pollution prevention programs by committing to closer supervision, which may improve productivity and reduce waste generation.
5. **Employee participation.** Environmental or Cleaner Production forums should be created which allow the employees and management to discuss potential waste reductions areas and possible ideas for implementation. Employees should also feel that they are playing a role in the CP programs. There should be an open dialogue of ideas and suggestions and possibly rewards for sections or personnel if ideas provide for major savings.
6. **Inventory control.** A record of purchasing of raw materials needs to be kept up to date in order to avoid unnecessary purchases. The over-ordering of raw materials may cause products to exceed their expiry dates, occupy large amounts of space and could pose a health risk, in the case of an accident. Regular checks should be done to ensure that the raw materials are being used correctly. A system of first-in, first-out should be set up to ensure that raw materials do not expire. There also need to be clear guidelines on how to dispose of raw materials in the correct manner.
7. **Monitoring.** Regular monitoring and recording water consumption allows management to spot a sudden increase in consumption that is most often caused by leaks and malfunction of equipment. Without monitoring, these leaks often go unnoticed for some time and are responsible for unnecessarily huge water bills.
8. **Workplace tidiness/safety.** The workplace should be kept clean and safe by keeping tools, floors and equipment clean; hiding hazards; making employees aware of the risk of their jobs and having the emergency safety measures in place; having adequate ear protection for workers where noise levels reach higher than 85dB. Keeping the workplaces safe and tidy helps create a smooth flow of goods as well as a good image to visitors.

Elements of good housekeeping campaign

Basic Elements	**Remarks**
Aisles	Wide enough for traffic of personnel, products and materials. Kept clean, clear, never be used for "overflow" storage. Marked off by floor lines to show clearly the space reserved for traffics.
Space	Sufficient room for the individual to work.
Storage	Adequate and convenient space for materials and tools. Kept tidy and order, use clear identity and label. Utilize air space instead of floor space. Never keep more stores and materials than necessary near machines; provide bins, shelves, boxes or racks to store them.

	Keep tools tidy whether in the tool room, on the rack, on the bench or out in the yard, use suitable fixtures to provide orderly arrangement.
Layout and Materials Handling	Design good layout for equipment to minimize motion and time. Use efficient methods and equipment for material handling.
Ventilation	Good general ventilation plus local exhaust ventilation to remove air contaminants at the source.
Floors and Walls	Use construction and materials that are easy to keep clean and hygienic. Floor conditions are responsible for many accidents, prevent it by keeping water, oil and grease off the floor. Chips, shavings, dust, and similar wastes should never be allowed to accumulate, removed frequently. Not only floors need for sweeping, dust also collect on shelves, piping, cupboards, lockers, and so on. Choose suitable colours to paint walls, ceilings and working surfaces, light-coloured walls reflect light and dirty or dark-coloured walls absorb light. Painting handrails, machine guards and other safety equipment renders them distinctive and also prevents rust.
Lighting	Well-distributed artificial light and effective use of available daylight. Maintain light fittings, clean the lamps and reflectors, replace deteriorated lamp. Clean windows let in light. Ensure that windows are not blocked by stacked materials, equipment or articles.
Amenities	Maintain a high standard of cleanliness in meal rooms, rest rooms, and locker rooms. A light-coloured paint can work wonders in these places and set a standard to which employees will try to conform. Soap and towels should be renewed regularly and wash basins properly cleaned.
Waste Removal	Adequate facilities to prevent congestion and disorder. Dispose of scrap and prevent spillage. Install container before waste/spill reach the floor.
Occupational Health and Safety	All fire-fighting equipment such as extinguishers and firehoses is regularly inspected and kept in good working order. Fireprotection facilities: fire doors and exits, automatic alarms, etc. should be in good working order. Doors and exits should always be kept clear of obstructions. Look after the first aid facilities, must be fully stocked and always ready whenever needed.
Buildings and Equipment	Attend regular maintenance of buildings and equipment. Replace and fix as quickly as possible facilities which get broken or damaged (e.g., defective ladders, broken handrails, steps, defective plumbing, leaking, broken floor surfaces, etc.)

	A good maintenance programme will make provision for the inspection, lubrication, upkeep and repair of tools, equipment, machines and processes.
Assigning Responsibility for Cleaning	The cleaning of the workplace should be the responsibility of a special cleaning staff and not an additional job for employees engaged in production. If this is not possible, adequate time during working hours should be allowed for cleaning up to be done. Responsibility should be clearly assigned as to who is to do the cleaning and what area is to be cleaned.
Prepare a Checklist	A sound method to ensure that housekeeping is done is for management to prepare a check list to suit the requirements of the workplace (See Appendix 1).

Conclusions

A good housekeeping program can start only when management accepts responsibility for it. Management must plan it in the first place and then make sure it consistently enforces the measures decided upon. To promote an effective housekeeping campaign, a system of joint participation by employers and employees in developing and maintaining a safe and healthy work environment must be developed. Good housekeeping helps to create better working conditions, safer workplaces, and greater efficiency. It is not an unprofitable sideline. It is part of a good business.

References

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Appendix 1. The good housekeeping checklist for industrial business

Buildings

1. Walls clean.
2. Windows clean.
3. Walls free of unnecessary hangings.
4. Proper light provided.
5. Platforms in good condition.
6. Stairs clean and well lit. Handrails and steps of sound construction and well maintained.

Floors

1. Good floor surface.
2. Kept clean and free of loose material. Clean in corners, behind radiators, along walls, and around pillars or columns.
3. Free of oil, grease, etc.
4. Operating floors, or work positions free of loose scrap, metal or other materials.
5. Free of unnecessary articles.
6. Bins provided for refuse.

Aisles

1. Free of obstructions.
2. Safe and free passage to fire-fighting equipment and fire exits.
3. Safe and free access to work positions.
4. Clearly defined.

Machinery and Equipment

1. Clean and free of unnecessary material.
2. Free of unnecessary dripping of oil or grease.
3. Area around machines clean and free of rags, paper, etc.
4. Lockers and cupboards clean and free of unnecessary material both on top and inside.
5. Benches and seats clean and in good condition.
6. Drinking fountains clean.
7. Toilet facilities clean and well ventilated.
8. Proper guards provided and in good condition.
9. First-aid facilities and equipment fully stocked and in clean condition.

Stock and Material

1. Properly piled and arranged
2. Kept in storage areas.
3. Provide clear identification

Tools

1. Properly arranged in place.
2. Free of oil and grease.
3. Inspected and maintained in good order.
4. Tool rooms and racks in clean and orderly condition.

Grounds

1. Yard and building surrounds free of refuse (fruit peelings, scrap, wood, iron, etc.)
2. Grounds kept free of weeds and overgrown vegetation.
3. Wastes and refuse removed frequently.

Appendix . Occupational Health and Safety and prevention of accidents through good housekeeping

Occupational health and safety (OHS) is considered an integral part of the overall cleaner production concept. A healthy working environment is a basic human right, and the benefits of a sound working environment are several:

- Healthy workers are productive and raise health families
- Healthy workers have higher work motivation and contribute to higher productivity and higher product quality (which is also a contribution to CP)
- Sound work places contribute to sustainable development
- Occupational health is fundamental to public health
- Development of health working conditions is poverty eduction

Good housekeeping is a vital factor in preventing accidents. The great majority of all work accidents are caused during the handling of goods or materials, and by people falling, being hit by falling objects, or striking against objects in the workplace. All these causes can be reduced by good housekeeping practices. In fact, good housekeeping is the only cure for hundreds of accidents that occur.

Here are some kinds of accidents commonly caused by poor housekeeping:

- Tripping over loose objects on floors, stairs and platforms.
- Articles dropping from above.
- Slipping on greasy, wet or dirty surfaces.
- Striking against projecting, poorly stacked, or misplaced material.
- Tearing the hands or other parts of the body on projecting nails, wire, steel strapping on bales or crates, etc.

Typical examples of poor housekeeping that lead to these accidents are:

- Excessive material, waste or chips in the working area.
- Congested aisles.
- Tools left on machines.
- Waste containers overflowing.
- Lockers and workrooms in disorder.
- Acids in open containers.
- Broken glass.
- Electric leads or air lines across aisles.
- Dirty light fittings, windows and skylights.

Where housekeeping is bad, fire is a constant hazard. It can be caused by many housekeeping problems, such as oil-soaked rags and clothing igniting from spontaneous combustion; dust collectors not being properly or frequently cleaned; or piles of paper and other packing materials being allowed to accumulate. Poor housekeeping can also lead to infestation by pests such as rodents and cockroaches and create serious health risks.