LyondellBasell Technical Tip

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A Simple Safety Program

Safety is a perennial concern for managers of plastics processing facilities. Whole sections of company policy manuals are devoted to the topic, signs throughout plants repeatedly remind workers to be aware of hazards, awards are given for number of days without an accident and the topic is repeatedly brought up at employee meetings.

But does the safety information given to your staff realistically address the hazards they're exposed to on a daily basis? It's one thing to stress safety as a lofty goal-"work safely and don't hurt yourselves"-and another to provide explicit instructions on how to avoid or eliminate specific hazards associated with operating the actual machines in your plant.

Lyondell has developed a program that processors can use to swiftly identify hazards and develop a series of simple safety checklists for each machine and piece of equipment used in a particular plan. Here's how to quickly identify and address potential hazards in your facility.

INSPECTION TEAMS

Between five and seven individuals are chosen to serve as an inspection team for the machine areas of the plant. The teams include the primary machinery operators, backup operators and other employees whose duties place them in the machine area. During the inspection procedure, the primary operators run the equipment, the backup operators take note and the other members of the team observe the equipment operation with an eye toward identifying potential and existing hazards.

For each piece of equipment, starting with machines that have the greatest hazard potential (such as granulators), observe the following basic steps of operation:

1. Mold/tooling changes and setups. This category includes charges that are made frequently and do not involve extended equipment shutdowns. The primary operator usually makes these changes.
2. Preparation. This includes assembling raw materials and turning on pieces of auxiliary equipment as needed.
3. Startup. These tasks are the necessary procedures to be performed before normal operations (purging, drooling, and so on) begin.
4. Operation of the equipment as it was designed to manufacture, test, move, or package product or reuse scrap materials.
5. Shutdown.
6. Cleanup of equipment and work area.

As each step in the operation process is observed, look for possible burn points, electrical-shock points, pinch points and unsafe mechanical conditions (such as missing guards and lack of electrical lockouts). See if there are any ways to modify each machine and its operating procedures to make the job safer and easier. Also identify whether protective clothing is needed and what kind of clothing is best suited to protect operators during specific operations.

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After each machine operation is observed, establish a schedule for quickly modifying each piece of machinery to eliminate any unsafe mechanical conditions that were noted during the inspection.

CHECKLISTS

The next in this process is to develop a Safe Operations Checklist (see sample on Page 3) for each piece of equipment. Using the notes taken during the inspection, draw up a list for each machine.

- Use the name of the machine for the title of the checklist for that particular piece of equipment.
- In the first column, list all potential hazards and the sources of these hazards for each of the six steps of operation.
- List the safe practices and emphasize the key steps to take to eliminate each specific hazard in the second column. Keep both lists as brief as possible.
- Include a comment section where workers can explain why any deviations were made in following the checklist.
- Include a space for the operator's signature.

The last, most important step is to make these checklists an integral part of the standard procedures for each equipment operator throughout the plant. To do this, require each machine operator to complete and sign a checklist each time he or she operate a piece of equipment and submit the checklist to his or her supervisor at the end of each product run. The comments section is intended to be used for describing unusual situations when a safety item was not checked off – for example, a piece of auxiliary equipment was not used during a certain product run, so auxiliary safety steps were not used.

By following this process, machinery operators are constantly reminded about the potential hazards presented by each machine and what steps to take to prevent injuries. The checklist should not be used as an operations guide and for that reason should not be printed with any other information on the same page. Make the list a separate piece of paper for each machine and make sure that supervisors insist on receiving completed checklists throughout each shift.

BLOW MOLDER INSPECTION: 16-POINT CHECKLIST

1. Check emergency-stop functions
2. Bottle weights versus targets
3. Cycle time
4. Thermocouple calibration
5. Check timer and temperature settings
6. Check heat exchanger operation: Clutch coolant, Hydraulic oil, Barrel coolant
7. Check hydraulic system operation: Fill pressure, Shot pressure, System pressure
8. Inspect machine safeties
9. Check hydraulic accumulator
10. Check blowpin alignment
11. Check and adjust parison drop
12. Inspect trimmer operation
13. Check bottle trimmability
14. Inspect pneumatic systems
15. Inspect regrind operation
16. Inspect material handling systems

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To keep these checklists current, be sure to update each list at least once a year and any time new equipment is purchased, existing equipment is modified or operating procedures are changed.

EQUIPMENT: BLOW MOLDING MACHINE POTENTIAL HAZARD (CAUSES)		
Tooling Change: 1. Burns (hot tooling and polymer) 2. Bodily Injury (clamp area, swing arms, conveyor, trimmer)	**Safe Practice Checks** 1. Wear gloves when handling hot tooling 2. Gate open 3. Hydraulic pump off 4. Accumulator dump valve open 5. Air supply off	**Check** O O O O O
Preparation: 1. Health (hazardous materials) 2. Slipping/Falling (materials on floor)	1. Read Material Safety Data Sheets (MSDS) 2. Check housekeeping 3. Check for leaks (water, oil)	O O O
Startup: 1. Projectiles and Burns (excessive and adapter pressures) 2. All Hazards (faulty emergency stops)	1. Check for low zone temperatures 2. Safety doors closed 3. Check for emergency stops weekly 4. Check trimmer safety doors	O O O O
Operations: 1. Burns (heaters, hot tooling, flash) 2. Projectiles (high extruder and head pressures) 3. Pinch Points (molds, swing arm, conveyor, trimmer)	1. Wear gloves during head adjustments 2. Start extruder up slowly 3. Monitor zone temperatures 4. Adjust parisons when molds are closed. 5. Use plastic rods to clear conveyor 6. Open trimmer safety gate to clear jam	O O O O O O
Shutdown: 1. Fire, Flood, etc. (equipment left on)	1. Wear gloves during head adjustments	O
Cleanup: 1. Slipping/Falling (materials on floor)	1. Check housekeeping 2. Check for any leaks	O O

Comments:

I have read the safe operations checklist and followed the same practices listed on the previous page.

Signature: Date:

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6892G/0715