

What is Competency?

能力是什么？

- Competency is...experience and knowledge to fulfil specified requirements for a given role or task within the company.

能力是..具备完成公司特定岗位或任务的经验和知识

- This means you have...
这需要你具备..

Correct knowledge & experience 正确的知识和经验

- Able to meet all requirements 能够满足所有要求

Capability to complete the tasks given 完成任务的能力

Process Safety Competency (PSC)

过程安全能力

How important is PSC PSC 的重要性

- Competency people are less likely to initiate situations that could lead to an incident
有能力的人不太可能导致事故发生
- Competency people can detect the early signs that an incident is possible and prevent it from occurring
有能力的人可以发现可能发生事故的隐患，并防止其发生
- Competency people can mitigate the impact of an event to reduce the potential for harm
有能力的人可以减轻事故影响，减少潜在伤害

Common issues - PSC PSC 常见问题

Lack of Experience, Capability & Competency 缺乏经验、能力和竞争力

- Limited operational experience or knowledge
有限的操作经验或知识
- Lack of experience – often adopt practices from past project without evaluating its suitability / adequacy in current operations
缺乏经验 – 经常采用过去的做法，没有评估其在当前操作中的适用性/充分性
- Being promoted too quickly
升职太快

Fitness for work(FFW)

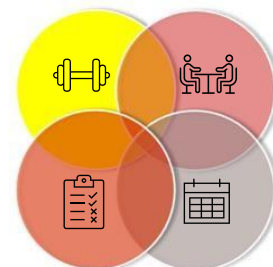
工作胜任力

- Able to meet required FFW& occupational health criteria for specific activities
能够满足特定活动所需的 FFW 和职业健康标准
- Declared “fit for work”
宣布“适合工作”
- Routine assessments and surveillance
常规评估和监测

Competency assessment & Personnel development 能力评估与人员发展

- Competency matrix/competency map
能力矩阵/能力图
- Performance review
绩效评估
- Adequate trainings
充分培训

Key areas for competency 能力的关键领域



Employee selection & placement 员工选拔和安置

- Operational knowledge and skills
操作技能
- Academic/craft qualifications
学术/工艺资格
- Defined work experience
明确的工作经验
- “soft skills”(non-technical skills) or leadership behaviours
软技能（非技术技能）或领导行为

Succession planning 继任计划

- Identify and retain skills and knowledge
识别并保存技能和知识
- Develop multiple individuals to take on designated role following unexpected vacancy
根据突发空缺职位，培养多名员工承担工作职责



Common PSC areas 常见的过程安全能力领域

Too experience “经验主义”

- Handover issues – often neglect proper protocol/procedures in handover
交接问题——经常忽视交接中应有的协议/程序
- Treat activated alarms as norm due to poor alarm management
警报管理不善，对报警熟视无睹，认为是正常情况

10 Seconds Thought

十秒思考



What competencies are required for your position ?

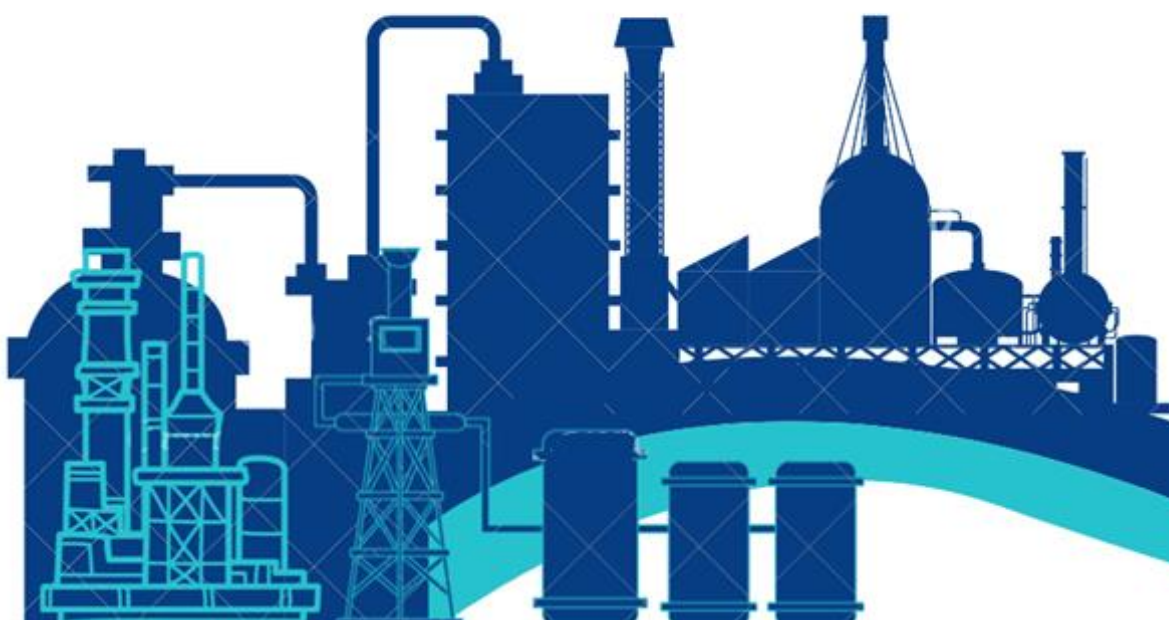
Do you have these abilities ?

What else do you need to do to improve your abilities ?

您所在的岗位需要哪些能力？

您是否具备这些能力？

还需要哪些做哪些努力来提高自己的能力？



Idle Does Not Mean Safe



Figure 1 Paint plant Explosion damage



Figure 2 Paint plant before the Explosion

At 2:46 AM, November 22, 2006, a violent explosion occurred in Danvers, Massachusetts. The explosion destroyed the ink and paint manufacturing facility (Figure 1) and destroyed or damaged nearby homes and businesses and shattered windows as far away as two miles (3.2km). On November 21, at about 1 PM, employees began mixing a 2000-gallon batch containing flammable solvents. The production manager opened the steam valve at about 3 PM to begin heating the mixture to 90°F (32°C). At 5 PM, the production manager returned and found mixture at about 90°F and left the mixer on to prevent undissolved resin from settling. At 6 PM, the last employee turned off the dust collector fans, exhaust fans, and fresh air supply fan, locked the building and left for the night. Flammable vapors escaped from the tank as it continued to heat and accumulated in the building due to the inactive ventilation systems. At 2:46 AM, the explosion occurred. Officials ordered an evacuation of about 300 residents and 10 businesses within the incident area. (Ref. CSB Report N. 2007-03-I-MA, May 2008)

The end of the year brings holidays to many parts of the world. Units or parts of operations may be shut down to reduce inventories or allow employees time off. This could mean a unit may not be in operation, but still hold hazardous materials like the tank in this incident.

Did You Know?

- Process materials remain hazardous when stored even in the correct process equipment.
- Equipment that is shut down or idled still needs to be monitored and alarms need to be addressed.
- Reactive materials held in process equipment may continue to react even below the specified reaction temperatures. They should be stored where they are safest.
- Conditions can change during a shutdown. Valves can leak or process drains can be left open.
- Plants may use idle time to conduct maintenance which can also cause changes to equipment or process conditions.
- When employees take vacation to celebrate holidays, crew size may be reduced and people may be performing tasks they have not done in a while.
- The "holiday atmosphere" can be a distraction to those who are running the plant.

What Can You Do?

- When equipment is shut down or idle, continue to monitor process data and alarms.
- Field rounds should be conducted with the same diligence as when the unit is in full operation to make sure things remain in a safe condition.
- If process materials are left in the equipment, the material and the inventory should be noted in the shift logbook.
- Double-check that drains and vents opened when emptying equipment are closed and all caps and plugs are reinstalled.
- If crew assignments require you to do a task that you haven't performed in a while, take extra time to read the procedure thoroughly. Watch for steps or PPE requirements that may have changed since you last did that task.
- Do not allow yourself or others to be distracted by holiday activities. Stay focused on your work and celebrate later.

Make sure your operations remain safe during the holidays.



装置停运并不意味着安全



图1 爆炸后的油漆厂废墟



图2 爆炸前的油漆厂

2006年11月22日凌晨2点46分，美国马萨诸塞州丹佛市某油墨和油漆制造厂发生了剧烈爆炸。爆炸摧毁了工厂（见图1），对附近的房屋和企业造成了破坏，连远在2英里（3.2公里）外的建筑窗户也被震碎。11月21日下午1点左右，员工开始对2000加仑的物料进行批量混合操作，这些物料中含有易燃溶剂。生产主管在下午3点左右打开蒸汽阀开始加热，准备将混合物加热到32℃。下午5点，生产经理回来发现混合物的温度已到了32℃附近，他将搅拌器继续开着以防止未溶解的树脂沉淀下来。下午6点，最后一名员工关掉了除尘风机、排风机和新风送风机，锁上大楼就离开了。到了晚上，由于通风系统不工作，含有易燃溶剂的物料继续被加热，易燃溶剂蒸气从水箱中逃逸出来，积聚在建筑物内。凌晨2点46分，爆炸发生了。政府官员对事发地区的大约300名居民和10家企业下达了疏散令。（参见：CSB报告N.2007-03-I-MA，2008年5月）

每到年底，世界许多地方都迎来各种节假日。为减少库存或让员工休假，工厂可能会关闭装置单元或部分运行设备。这意味着某些装置可能不再处于运行状态，但这些装置里仍然存在危险物料，这就如同上述事故中的贮罐一样。

你知道吗？

- 即使工艺物料存储在正确的工艺设备中，也依然存在着危险。
- 已关闭或闲置的设备仍需要进行监控，其发出的报警信号仍需要进行处理。
- 即使低于规定的反应温度，工艺设备中的反应性物料也可能继续发生反应，它们应该存储在最安全的地方。
- 在停车期间，工况可能会发生变化。阀门可能会泄漏，工艺排放管可能会保持打开。
- 工厂可以利用停车时段进行维修，这也可能导致设备或工艺状况发生变化。
- 当有员工休假庆祝节日时，上班员工人数可能会减少，班上的员工可能要去完成某些他们较长时间都没做过而显生疏的工作任务。
- 所谓的“节日气氛”可能会导致上班员工分心、精神不集中。

你能做什么？

- 当设备停机或闲置时，要继续监控工艺参数和报警信息。
- 对停用设备的现场巡检应与运行设备一样认真对待，确保其保持在安全状态。
- 如果工艺物料留在设备中，应在轮班日志中注明物料种类和数量。
- 要再次检查那些在清空设备时打开了的排液口和排气口，确认它们已经重新关闭了，所有的管帽和堵头均已重新安装到位。
- 如果在分派给你的工作任务中，有某项是要你去做而你已有一段时间没有做过的工作，那么请你用更多的时间仔细阅读相关制度和规程。值得注意的是，自从你上次做完该项工作后，工作步骤或防护用品（PPE）的要求可能已经发生了改变。
- 不要让自己或他人因节日活动而分心。请在你的工作上保持专注，稍后再庆祝。

要确保节日期间的装置运行处于安全状态！

