Mike Rantell

For this issue of 'Safety is my Job' I interviewed Mike Rantell who works as Process Safety Lead for Novartis Grimsby Ltd making active pharmaceutical ingredients. He graduated from Cambridge University in 1993 with a Masters of Engineering in Chemical Engineering and is a chartered member of the Institution (MIChemE). He is also a profession process safety engineer (PPSE) as well as being qualified as a certified process safety professional through the American Centre for Chemical and Process Safety CCPS.

Mike, what is your role at Novartis?

My responsibilities on site encompass all things process safety as the site lead within the HSE section. Specific responsibilities include leading HAZOP, HAZID and LOPA studies. I also lead audits ensuring our management systems are working and report our process safety performance indicators to the site leadership team. I led the 5 year review of the site's COMAH Safety Report ensuring the right subject matter experts were involved at the right time.

The aspects of process safety that I apply are based on the Novartis Global Operating Procedure for process safety, which in turn is based on the CCPS 20 elements of process safety management. For example, one CCPS process safety element is compliance with standards. This means ensuring the site complies with legal standards such as DSEAR and its published approved code of practice, but also with recognised industry good practice. These include standards like IEC61511 for functional safety or HSE published guidance such as HSG176 for storage of flammable liquids in tanks. So keeping knowledgeable about current good practice is a key part of the role.

Is it possible for you to describe an average week?

It might include leading a team review of an existing HAZOP or Process Hazard Analysis. Often temporary plant modifications require a simpler task based risk analysis to ensure the change is fully assessed. I regularly interact with operations and engineering in order to ensure risk assessments are accurate as well as providing process safety expertise when relevant near misses or incidents occur. Health & Safety Executive COMAH interventions come round relatively frequently. That means most weeks we are preparing for one visit or other. I am often called upon to present to the regulator so preparation is key to ensure the right information is presented clearly that answers the questions posed by the agenda.

I've always found that the most interesting parts of a job are when I'm learning something new, and in this role there's always something new to learn. I'm lucky enough to be involved with cross industry best practice groups. This allows me to talk to fellow process safety experts and see how good practices are implemented in other industries and sectors and learn from their experience. Another aspect I find interesting is the sheer variety of hazardous materials used both historically and currently. Highly flammable solvents are our bread and butter, but we also have used anhydrous hydrogen chloride, pyrophorics, water reactives, hydrogen and highly toxic substances. When a new process is implemented on site, then new materials have to be handled. It is therefore part of my role to understand the hazards and so help to define and agree the right measures are in place for safe operations.

Is there a particular project which you are pleased to have worked on?

The project that has given me the most satisfaction has been the implementation of a human factors programme on site. We visited a local fellow upper tier COMAH site that had already gone through implementing such a programme. It was really useful to understand some of the pitfalls to avoid. For example, if too many critical tasks are defined then the system becomes very large and difficult to manage. The first step was to gather our critical tasks list. We had HAZID documents that covered all the site's processes and identified all potential major accident hazards and the prevention barriers. These were utilised to identify potential critical tasks by relating each barrier to a manual task covering both operations and engineering. The tasks were then prioritised by scoring each for vulnerability – how complex was the task and so how likely to succumb to errors. Also, we scored for criticality, would an error directly lead to major incident or are other barriers present. The highest items on this matrix became our critical tasks. Each task was then subjected to critical task analysis and human reliability analysis so that the potentially critical errors were understood and measures identified. The critical procedures were updated to make instructions clear and identify the critical points. The final step was then to define the training curricula for each task. This could be a combination of SOP's, classroom training and presentations. However, all critical tasks included a final competence observation so that each individual is passed out as competent once fully trained and observed. The key success point was that this system gave a clear line of sight from Hazard ID to critical steps in procedures to training and finally to competence observation.

*How does your role contribute to solving society's grand challenge*s?

That's a difficult question to answer. 'Despite all the precautions we take in process safety we have to accept that risks cannot be eliminated' We have to ensure that the benefits of making products such as Pharmaceuticals always far outweigh the risks to people both on and off-site. We can only do that by ensuring risks are As Low As Reasonably Practicable and that industry good practice is adopted.

A key process safety challenge in my sector is managing reaction hazards. Whilst measuring and understanding synthesis and decomposition reaction hazards is a staple part of any new process, it is still too easy to become complacent. Management of change systems need to be robust to ensure any change that affects reactions is assessed and of course, those working on the processes also need to be trained in the hazards.

What prompted you to choose chemical engineering?

I identified Chemical Engineering as the career for me because at school I was good at maths and sciences but also enjoyed the practical side of things. Researching into Chemical Engineering I found that industrial processes such as refineries captured my imagination.

For anyone thinking of moving into process safety I would advise that it's good to have a thorough understanding of risk. Reading the HSE document "Reducing Risks Protecting People" (R2P2) and the HSE ALARP suite of guidance are good places to start. Being a member of the IChemE has given me a structure to base my career around, particularly when I moved into my current role. The Professional Process Safety Engineer certification scheme provided me a way of identifying where my strengths and weaknesses were for such a role and hence what I needed to work on.