Case study

Sweet simplicity

The maker of KitKat, Aero and Milkybar tells Jocelyn Dorrell how its design stage risk assessments have helped to reduce accident rates and boost morale

IN THE hierarchy of controls, risk elimination is always top of the list. For confectionery giant Nestlé, returning to this basic tenet of safety management has reaped rewards. Focusing on designing out risk has helped the firm reduce the injury rate at its York factory by more than one third (38%) in three years.

The factory, which manufactures five million KitKats a day and is one of the world's largest confectionery sites, has seen its recordable accident frequency rate fall by 75%, from 6.5 to 1.6 per one million hours worked, in part due to its design stage risk assessments scheme.

Right first time

Like many of the most effective safety management approaches, the scheme is a simple idea. It involves identifying hazards at the design stage before machinery and processes are engineered and installed in the factory or before modifications are made to plant.

The fundamental aim is to design something that is safe to start with, rather than try to introduce measures to make machinery or processes safe once they're in operation.

"What we're aiming for is 'right first time'," says Nicola Callaghan, health, safety and environment manager at the York premises, which employs 850 people and also counts Aero and Milkybar among its products.

"Retrofits can be very expensive; you have to find the time for the machinery to be down so you can make changes to it; and measures put in place retrospectively can often be less effective."

Callaghan came up with the idea for the scheme in 2009. "We felt we needed more consideration of risk at the development stage," she explains. "We were very good at the engineering aspects, but not so good at looking at the interaction between workers and the workplace. So, for example, we weren't always considering manual handling or slips, trips and falls. We were missing the opportunity to design out risks at source."

Eliminate at source

The design stage scheme involves assessing all new plant, process or significant modification to plant to judge the potential for it to cause accidents or ill health. The assessment is carried out by a group, usually led by a process engineer and including managers, craftspeople, union reps and engineers. They look at the design proposal early in the process while the plan is "still fairly fluid", says Callaghan.

During the assessment, the team looks in turn at the key areas of goods receipt, manufacturing, packing and despatch. Within each of these areas, the team considers normal operations, abnormal operations, cleaning, and maintenance, using a checklist to decide what the risks might be under each of these headings.

The checklist covers some of the most common causes of accidents and

ill health, and includes risks such as manual handling; plant layout; slips, trips and falls; noise levels; working at height; and hazardous substances. For each risk, the focus is on elimination. So, if the assessment highlights that within the proposal there is a manual handling risk associated with goods receipt, the team will try to eliminate the need for manual handling before considering how to devise controls to minimise the risk.

Up front

The involvement of workers from the shop floor is crucial to the process, since they have the knowledge, experience and ideas to anticipate where potential problems with a plan may lie.

"They're the experts," acknowledges Callaghan. "They're going to pick up more than someone who doesn't actually work on the equipment. Also, because they're involved in the design of the process, their morale and sense of ownership increases."

The design stage assessments were introduced in 2009 and the workforce adapted quickly to the new way of working. "We have a culture where safety is the priority and where it's very well embedded," says Callaghan. "Workers were very keen to get involved."

At the start of the scheme, Callaghan mentored the process engineers doing the first design stage assessments, and sat in as the groups went through their checks. The new system was adopted without difficulty. "It's quite a straightforward process once you're into it," she says.

Nestlé used the design stage assessments effectively during the introduction of new silos at the York factory. When the silos were initially proposed, a team went through the checklist and, based on their findings, the company made several changes.

One problem raised was the need for access at the top of the silo and the difficulty workers faced carrying tools while climbing the hooped ladders on the existing silos.

So the design was changed to include proper stairs, with hooped ladders being used for emergencies only.

Other changes made to the silos at this early stage included:

- a locked base so that access could be limited to authorised people only
- the introduction of ground-level testing facilities to reduce the need for workers to have to go to the top and work in confined spaces
- the addition of a cage for lifting tools to the top of the silo and for lowering people in an emergency.

"All of these things involved just a little thought up front," says Callaghan.

Continual improvement

Last October, the scheme's success helped the York factory's safety, health and environment team win the 2012 National Food and Drink Health and Safety Awards, an annual event run jointly by the HSE and the Institution of Occupational Safety and Health to recognise innovative responses to safety challenges in the industry.

"We've seen accident rates fall significantly," says Callaghan. The frequency of accidents to workers at the York site dropped from 81.5 per one million hours worked in 2009 to 50.8 in September 2012.

"Plant might typically last 30 years, so it's far better to make changes when it's a piece of paper than when it's a piece of metal"

"You can't attribute [the reduction] only to the design stage risk assessments because we're doing lots of different things," she notes, "but it certainly has had an impact. It helps us with continual improvement."

On paper

One of the scheme's key attractions is that the costs are minimal. The time taken for a team to carry out the detailed checks on every aspect of a new design proposal varies according to the kind of new equipment or process, but for a simple piece of plant it might take just a day.

The benefits, though, are numerous: a fall in accident and injury rates and their associated costs; a reduction in lost time; improved morale among factory workers who can use their own knowledge and experience to improve safeguards; and the minimisation of retrospective adjustments to plant.

"You can't pick up everything," she says, "as you're looking at a plan on a piece of paper. But the assessments do pick up about 90% of risks."

To put it in perspective, Callaghan echoes the comments of a factory worker at the York site: "A piece of plant might typically be designed to last 30 years, so it's far better to make changes when it's a piece of paper than when it's a piece of metal."