

For publication in June 2010 Journal of OPCW

Ethics in Chemistry : Why it matters.

In 2005 the OPCW together with the International Union of Pure and Applied Chemistry (IUPAC) held a conference in Oxford (UK) to discuss the topic of codes-of- conduct for chemists, and more broadly, how to introduce chemists to chemical warfare issues. Educational material was seen as vital for this and teaching material on the multiple use of chemicals was prepared by a working group- details on where to find this are at the end of this article. One ideal way to introduce topics to chemists is through case studies. What follows is an example.

Imagine it is several years since you obtained your chemistry degree. Life has been pretty good since then as far as work is concerned. After finishing university you had an 18-month post with a small pharmaceutical company working in their laboratory and then spent three years working with the production manager for another small company which makes pesticides. You were flattered to be head-hunted for your current post, sales manager for a medium sized firm, *Buysolvents* You have now been in the business of making and selling solvents for about 2 years and the business is growing slowly.

Buysolvents has a broad customer base. Most sales are to regular customers. Some of the company's principal clients for solvents are in the Middle East, an area of increasing opportunity for your company, and a key target for meeting your monthly sales quota and obtaining bonuses..

One customer, *MarketChemicals* is in an unstable part of the Middle East. *MarketChemicals* has been a customer for years. Out of the blue *Buysolvents* receives an order from *MarketChemicals* many times larger than the norm. *MarketChemicals* usually purchases a range of normal and branched chain alkanes and a variety of solvents with thiol groups. One of these is thiodiglycol and the company has used the solvent to dye cloth which is, in turn, is used to make uniforms for both the health service and the military. Curiously, the new order for thiodiglycol is for a quantity 30 times larger than the usual order. You are pleased to learn that *MarketChemicals* has asked if this larger quantity can be provided on a more regular basis.

Thiodiglycol is a very profitable line for *Buysolvents*. So the new order is a great business opportunity. When *MarketChemicals* placed the order it sent its request direct to you as sales manager. But it was more personal than this. You were singled out as a very reliable person and *MarketChemicals* was placing the order with the company because it knew you would guarantee to provide a regular shipment. Other companies had been considered but it was because you were known that *Buysolvents* was to get the business.

This order for thiodiglycol means growth for the company, guaranteed employment for several people working on the particular production line. In addition you meet your quotas easily, and with the size of the regular order, promotion is certainly on the cards. You can picture it now. Not just sales manager, but a much more senior post, a seat on the board, and within 10 years probably overall manager of the company. What an opportunity!.

However, being good at your job means that you are well informed about professional ethics and certainly about what uses the chemicals *Buysolvents* sells can be put to. It has not escaped your notice that thiodiglycol can also be used to make mustard gas. You have been reassured by *MarketChemicals* in the past that the solvent is only used as a dyestuff. The new order, you are told, is because the company has a new large contract to dye cloth for school uniforms. So what do you do? Do you ask for another end-user certificate just to cover yourself and allay a touch of anxiety? Will *MarketChemicals* be offended if you ask for yet another guarantee? You might lose the contract if you push too hard. And that will not help your promotion prospects.

Could you make any discreet enquiries without anyone knowing? Do you discuss it with your boss? You do not get on very well with him anyway. This could be his perfect opportunity. He might insist on doing all the negotiations himself and then claim credit for landing the contract. You visualise remaining in your current post for years and always having this guy over you. Will you even keep your job if he eventually becomes managing director when this could be your post in time? Why are there so many questions? Isn't it just a simple order?

Surely the best approach is to see it as just business?. You have an end-user certificate. What more could anyone ask for? But what if? What if it was subsequently shown that the country where *MarketChemicals* is based had been using mustard gas against members of the opposition in an internal conflict that had not been in the eye of the media. Someone would then be bound to ask questions about how it was made, by whom, and with what help. If *Buysolvents* was found to be the supplier of the feedstock for the mustard gas you could forget about promotion; jail would be a more realistic prospect.

This scenario is not atypical as far as orders for chemicals are concerned. It is unusual because it is about the ideal reagent used as a starting point for making mustard gas. That same reagent is used mostly for beneficial purposes – it's a good example of the multiple uses of chemicals. But it could have been about the supply of chemicals for making illegal drugs or other illegal weapons. Would you not want to ask questions in these instances too? Or would it just be a business opportunity? You would not be alone if you saw it as just that. Many would argue that it is up to somebody else to do the policing. You are just a supplier of chemicals and not the world's guardian. But is this right? Is it an ethical approach to take? Surely ethical behaviour is important for business, indeed necessary for it? Or is this just wishful thinking?

Alastair Hay and Peter Mahaffy were both part of a team that developed educational material on the multiple uses of chemicals for the OPCW and IUPAC. The information can be found at the following website :

www.iupac.org/multiple-uses-of-chemicals

The International Year of Chemistry, IYC2011, is an opportunity to draw global attention to chemistry, and the beneficial role that it plays in providing the substances on which every aspect of modern life depends. Along with that opportunity comes the individual and collective professional responsibility to make sure that multiple use materials are used for beneficial purposes. You can find out more about IYC-2011 at

www.chemistry2011.org.

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