

# TTE GUIDE 3: COMAH Factsheet



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### What's COMAH about?

The Control of Major Accident Hazards Regulation, SI 743/1999, as amended, is used to identify industrial sites where Major Accidents may occur, and regulates how they are to be operated to prevent Major Accidents.

Major Accidents are incidents which have the potential to kill or seriously injure many people, or cause the environment to be poisoned severely, or for a long time (which ultimately may also affect human health). The most famous recent example of a Major Accident in the UK is the Buncefield fire of 2005.

*Major Accidents are the incidents which you really, really don't want to happen.*

The legislation has been designed to identify those sites which experience shows have the potential to have a Major Accident. It is not about "business prevention" or "red tape" – it is about saving lives, and not poisoning the environment for the future.

### Where does COMAH come from?

The COMAH regulations are the UK's way of implementing the Seveso II directive from the EU, which is named after the small Italian town of Seveso where a very serious accident released dioxins into the environment in 1976.

Before Seveso II, there was Seveso I, which was the basis for CIMAH (Control of Industrial Major Accident Hazards regulation) in the UK from 1984 to 1999, when COMAH started. Prior to that, the UK already had its own major accident legislation, following on from the Flixborough disaster in 1974 where 28 people were killed in an incident at a chemical manufacturing plant.

### What types of Major Accident are covered by COMAH?

Typical Major Accidents that are covered by COMAH are:

- Fires
- Explosions (solids, liquids, gases)
- Toxic gas releases
- Releases of hazardous materials to the environment (a **Major Accident To The Environment** is referred to as a MATTE).

Major Accidents not covered by COMAH include:

- Transport accidents for rail, road, air, sea (although a transport accident might trigger a Major Accident, eg a road tanker might bump into a tank).
- Offshore oil and gas incidents
- Military incidents

Often a Major Accident contains multiple serious events, quite often for previously unknown reasons, and with unforeseen consequences. For example, at Buncefield, the original Major Accident was a fire and associated vapour cloud explosion, which spread to several other fuel storage tanks. During the fire, some of the tanks and their bunds collapsed, which led to spillages of fuel which moved into nearby drains. Unfortunately one of the drainage manholes had an old forgotten borehole which had not been sealed, and this allowed the fuel to go down into a large chalk aquifer which is used for drinking water.

As more information is found out about how a Major Accident might occur, new preventative measures are put in place, so COMAH is an ongoing process. Sites under COMAH also have to carry out reviews after significant changes, or at least every 5 years, to ensure they are managing any changes safely, and complying with updated requirements.

Another way in which COMAH is ongoing is the concept of ALARP – As Low As Reasonably Practicable. This recognises that although companies can do many things to prevent a Major Accident, some risks are so remote that it would be unreasonable to expect them to spend a huge amount of money on their prevention. Sites regulated under COMAH are never described as meeting ALARP, but as moving towards it, as it is recognised that there is always more which could be done to improve safety.

COMAH is about preventing “known knowns” and “known unknowns”, and it could be argued that the concept of ALARP also includes the possibility that something may crop up completely unexpectedly and cause problems (the “unknown unknowns”).

### What sites does COMAH apply to?

COMAH mainly applies to the chemical industry, whether for chemical manufacturing, formulation, warehousing and storage. The onshore oil and gas industry is also affected, including fuel depots like Buncefield. Other sites include food sites making and/or storing high strength alcohol, explosive manufacture, and nuclear sites.

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There are some exemptions which are given in Regulation 3 to the COMAH regulation (there is a link at the end of this factsheet), but if you think you fall into this category, we strongly recommend you discuss this with the HSE, and get a decision from them in writing. You don't want to think you're exempt when it turns out later that you are liable.

### How do the regulations work?

The COMAH regulations apply on an individual site basis. If your business has several sites, they must be treated as individual units (unless they are adjacent to each other, and a Major Accident on one would spread to another).

It's **up to you** to decide whether your site comes under COMAH or not. The HSE don't tell you, although if they suspect you might come under the regulations they will ask you to carry out a COMAH liability calculation, and check to see if they agree with you.

If you should be in COMAH and haven't applied, you run the risk of being prosecuted and fined. So it's important to make sure you understand where your site stands for COMAH, to avoid giving the HSE your money un-necessarily and getting a reputation for non-compliance.

If you are within COMAH scope, and you can't reduce your COMAH inventory to take you out of the regulations (which is perfectly legal, by the way), then you have to apply for authorisation from the Competent Authority (see below), and you must also apply for Hazardous Substance planning consent from your Local Authority.

Once the authorisation has been granted, the site has to meet the requirements of the Competent Authority, or consent may be suspended or withdrawn. The Competent Authority has legal powers to close site operations until their requirements are met.

So ultimately COMAH is "comply or close". If you want to set up or continue operating a business where you are storing, using, or processing hazardous substances in any significant quantity, it's essential to know whether you come under COMAH or not.

As going into COMAH can be a costly process which appears to come straight off the "bottom line", that is it only reduces your company's profits, there can be resistance within a company to going into these regulations. However, complying with COMAH is a cost of being in the type of business which handles hazardous materials – it allows you to be in business in the first place.

### Who's the Competent Authority for COMAH?

The Competent Authority (CA) for COMAH consists of the Health and Safety Executive, and the Environment Agency (in England & Wales) or the Scottish Environment Protection Agency (Scotland).

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In practice, the Lead Regulator (the ones you see the most of) is always the HSE, even on sites where the risks are mainly to the environment. There is a whole department in the HSE called the Hazardous Installation Directorate, HID, who deal with COMAH. HID has several area offices.

Important note – if you want to discuss COMAH with the HSE, make sure you speak to someone from HID, as they have the expertise to answer your questions. Your local HSE Inspector is a generalist, and is unlikely to have much experience of COMAH.

Competent Authority duties include:

- Reading COMAH applications and giving advice on improvements required
- Site inspections
- Enforcing non-compliance, up to and including prohibition

### How can you tell if COMAH applies to your site?

COMAH liability is based on the hazardous properties of one or more materials, combined with the inventory held on site at any one time.

This is based on two criteria – “named substances” which are listed in the COMAH regs 2005; and materials with specific hazardous properties, based on the CLP classification of the individual material.

Important note: if you are identifying COMAH-liability based on CLP classifications, you need to consider the properties and quantities of the material which you are holding, and not simply look at any hazardous components (unlike REACH registration and CLP notification, which follow this format)..

For example, if you have a 100 tonnes of a 20% solution of a material which in pure form is classed as H400/H410, but at 20% is classed as H411. The amount of COMAH-liable material you hold is 100 tonnes classed as H411, and not 20 tonnes classed as H400/H410.

You need to identify which COMAH liable materials are held on site, and how much there is (or could be). This information is then compared to thresholds given in the COMAH Regulations, 2015, Schedule 1 (there is a link at the end of this factsheet).

The comparison between your COMAH inventory (maximum amount held on site at any one time) and the thresholds in the COMAH regulation is carried out using two sets of algorithms (calculations), which are also given in the COMAH Regulations 2015, Schedule 1, Note 4.

The reason for carrying out two sets of calculations is that there are two levels of COMAH liability, Lower Tier and Top (or Upper) Tier. As you might expect, Lower Tier is for sites with lower risk, and compliance is less onerous. Top Tier is for the most hazardous sites.

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By working through the Lower Tier COMAH calculations, you will produce a number – if it is greater than or equal to 1, you have Lower Tier COMAH liability. Similarly, the Top Tier COMAH calculations need to be carried out to check for Top Tier COMAH liability.

Note that the calculations are also carried out for the major hazard groups of fire and explosion; toxicity; and environmental toxicity individually. (originally there was an over-arching calculation which combined all the hazard classes together but this was removed in 2005).

So there are 6 overall calculations which need to be carried out:

Lower Tier, fire and explosion	Top Tier, fire and explosion
Lower Tier, human toxicity	Top Tier, human toxicity
Lower Tier, environmental toxicity	Top Tier, environmental toxicity

If any one of these calculations produces an answer of  $\geq 1$ , you have COMAH liability. If you get an answer of  $\geq 1$  in more than 1 hazard category, you are still liable. If you get an answer of  $\geq 1$  in any of the Top Tier categories, this over-rides any Lower Tier consideration.

Even if there is enough of one dangerous substance present on site to qualify as either a Lower or Top Tier site, you should still carry out this calculation, as you will need to identify and include all the dangerous substances you have on site in your COMAH application.

For more details, see our COMAH Calculation Factsheet, part of the COMAH liability toolkit downloadable from our website.

### What types of material are COMAH liable?

COMAH materials may be substances or formulations (also known as preparations or mixtures); if they have COMAH-liable properties, they must be included in the COMAH assessment, (although there are “de minimis” quantities, which are so small you don’t need to include them)..

Not all hazardous substances are COMAH liable, only those which are specifically listed in the COMAH regulation (known as “named substances”), or those with specific hazard properties, which are also listed in the COMAH regulation.

An example of hazardous substances which are not COMAH liable is anything classed only H412; however H400, H400/H410 and H411 are COMAH liable.

Materials which are non-hazardous, or which are hazardous but are not COMAH-liable are **not included** in the COMAH assessment. An example would be acids or alkalis which are only classified as being corrosive, these may not be in COMAH.

### Hazard classifications changing under CLP compared to CHIP

When materials are reclassified from CHIP to CLP, they won't necessarily end up in the classification you might expect, particularly for toxic materials. They might also change COMAH classification.

An example of the way in which COMAH classification may change between CHIP and CLP is Hydrofluoric Acid. A solution of Hydrofluoric acid with concentration between 7% to just under 10% will change its Lower Tier threshold from 5 tonnes to 50 tonnes, and its Top Tier threshold from 20 tonnes to 200 tonnes, allowing more to be stored on site without breaching COMAH.

So when you come to run your COMAH classification in 2015 using CLP, there may be some unexpected changes to your liability.

### How much will the regulators charge if my site goes into COMAH?

The Health and Safety Executive, and the Environment Agency have an hourly charge out rate for COMAH related work. The last published information on their websites is £155 per inspector hour for the HSE, and £125 per inspector hour for the EA, but these are known to have risen slightly in the intervening years.

Charges are applied for reading and processing the application for COMAH authorisation, and for site visits. A typical Top Tier site is likely to be charged for a number of visits a year ranging between a single Inspector for a couple of hours up to a team of specialists for a week.

Unfortunately, a Top Tier application can be a bit of a blank cheque to the regulators – initial fees to read and comment on a Top Tier Safety Study can be in the tens of thousands, depending on the complexity of the site, and annual fees for a minimum of 4 site visits per year can be around £10,000 or more. There is a link at the end of this factsheet to the HSE COMAH charging pages on their website.

Lower Tier applications and ongoing costs should be significantly lower, as the risks from such a site are deemed to be lower, and the Major Accident Prevention Plan (MAPP) is a much shorter document.

There are also Planning Consent fees payable to the Local Authority, although these are a one-off.

### What about other costs?

There are costs in compiling information for a COMAH application, either using consultants or in management time. Lower Tier is much less onerous than Top Tier, and the work can often be handled in house, eg by your Health and Safety Manager.

However Top Tier sites usually require specialist consultants to work with your management team, as the Safety Study is a large and complex document to compile. As well as providing skills in risk analysis, consequence modelling and ALARP demonstration, consultants can also help with project managing the production of the Safety Study, so that it gets done on time. You will need to get quotes from specialist COMAH consultants for this, as costs vary widely depending on the complexity and levels of hazard in your operations, and the sensitivity of the site's human and natural environment.

There may also be costs to bring your site closer to the ALARP standard.

### **COMAH and Hazardous Substance Planning Consent**

There are several reasons why sites go into COMAH:

- Increase in inventory of COMAH-liable materials
- Change of classification of existing hazardous materials handled on-site
- Change in the regulations

In the first instance, your planning application may be gone through in some detail, and could even be refused, as you are increasing the stocks of hazardous materials on site for business reasons. (If it were to be refused, you would not be able to increase stocks and go into COMAH, although Local Authorities usually follow the advice of HSE on Hazardous Substance Planning Consent).

However in the latter two cases, a site may be entering COMAH without changing the amounts of materials on site, for reasons outside a site's control, in which case planning consent becomes more of a formality ("deemed consent"). It can be useful to discuss how easy it would be to gain planning consent with your HID contacts.

### **Is it possible to keep out of COMAH legally?**

Yes, we have written a white paper about this as part of the COMAH liability toolkit downloadable from our website (name and email address required).

### **What should we do if we're COMAH-liable?**

The situation is very complicated in the period from 1<sup>st</sup> June 2015 to 1<sup>st</sup> June 2016, so we have written a factsheet as part of the COMAH liability toolkit.



### What should we do if we aren't COMAH-liable?

If you have carried out a COMAH liability calculation and you think you are not liable for COMAH, there are three options: either to sit on the results until you are asked for them, eg by HSE; to get the results checked by a third party such as a consultant, so you can be more confident they are correct (as long as the inputs are accurate); or to ask HSE to check them for you, and to confirm you are not currently COMAH liable.

TT Environmental Ltd usually recommend you run your calculations past HSE because if they later turn out to be incorrect and you should have been in COMAH for several years, this would put your business at risk of prosecution. (Checking with HSE means you shouldn't get a nasty surprise several years later).

If a consultant has carried out the COMAH liability calculation on your behalf which shows that you are not COMAH liable, they should also be happy with having their method and results checked by HSE up front. If they do not advise you to do this, we suggest you get a second opinion – after all, it is your business which is at risk from enforcement by HSE if the consultant's answer is wrong.

### If you are new to COMAH – a word on Process Safety

Process Safety is a broad discipline covering the risks from industrial processing and handling of hazardous materials (some people interpret it as covering all processes, but we'll stick with hazardous materials).

There are intrinsic risks to hazardous materials such as toxics which can poison you, or flammables which can cause fire, or cause flammable atmospheres and explode. However, when you start handling or processing these materials, the risks can increase considerably because of how the plant is built, whether there are ignition risks, leaks etc, and process safety covers these situations.

A classic example of a process safety discipline is DSEAR (Dangerous Substances and Explosive Atmospheres Regulations). DSEAR requires you to assess the risks from flammable atmospheres on your site; and you need to use the right grade of ATEX rated equipment in those atmospheres (depending on what type of flammable atmosphere can be formed).

Other process safety disciplines include: modelling and assessing the consequences of explosions; fires; stack releases (normal or abnormal); environmental releases to land, groundwater or surface waters etc. The types of risk assessment needed on an individual site will depend on the hazards of the materials handled on site; and the surrounding human and natural environment.

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### Useful links:

COMAH Regulations 2015:

<http://www.legislation.gov.uk/uksi/2005/1088/contents/made>

HSE COMAH pages: <http://www.hse.gov.uk/comah/index.htm>

HSE COMAH application forms/ information:

<http://www.hse.gov.uk/comah/notification/index.htm>

HSE COMAH charging: <http://www.hse.gov.uk/charging/comahcharg/comahch1.htm>

Buncefield official investigation: <http://www.buncefieldinvestigation.gov.uk/index.htm>

Description of Seveso incident (on wikipedia, but a good summary of a complex event): [http://en.wikipedia.org/wiki/Seveso\\_disaster](http://en.wikipedia.org/wiki/Seveso_disaster)

**Thank you for reading this factsheet.** We hope it has been useful. If you have any comments, suggestions for improvement, or further queries regarding COMAH then please do call us on 01422 24 22 22, or email [info@ttenvironmental.co.uk](mailto:info@ttenvironmental.co.uk).

Disclaimer: The advice we can give in factsheets like this is generic, and you should check your own situation regarding regulations and regulatory guidance before taking any actions based on advice contained herein.