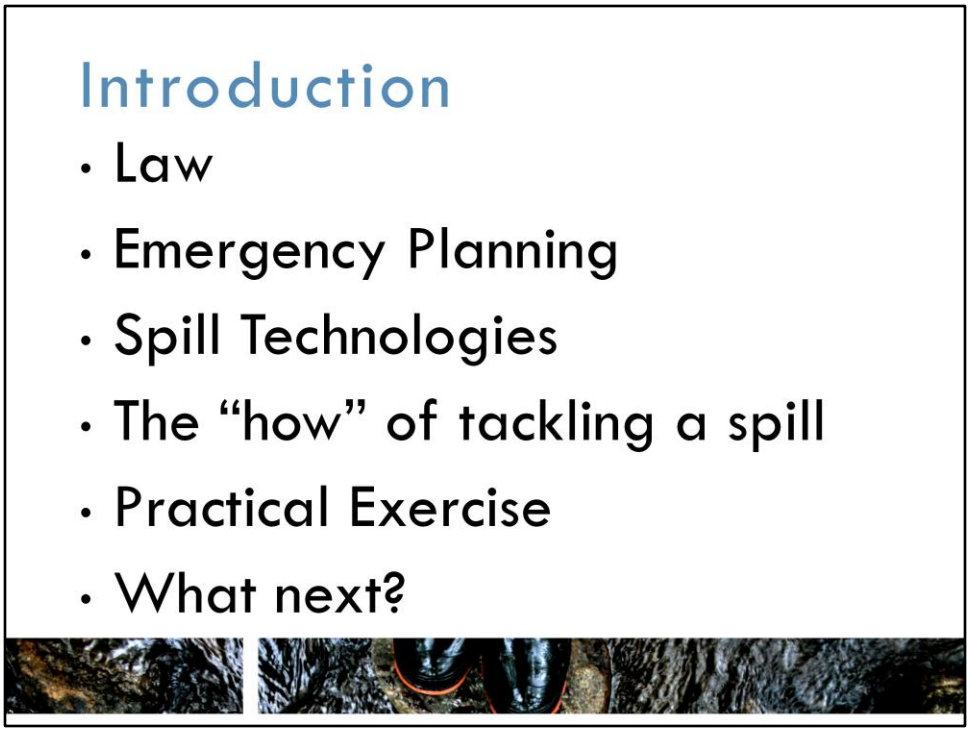
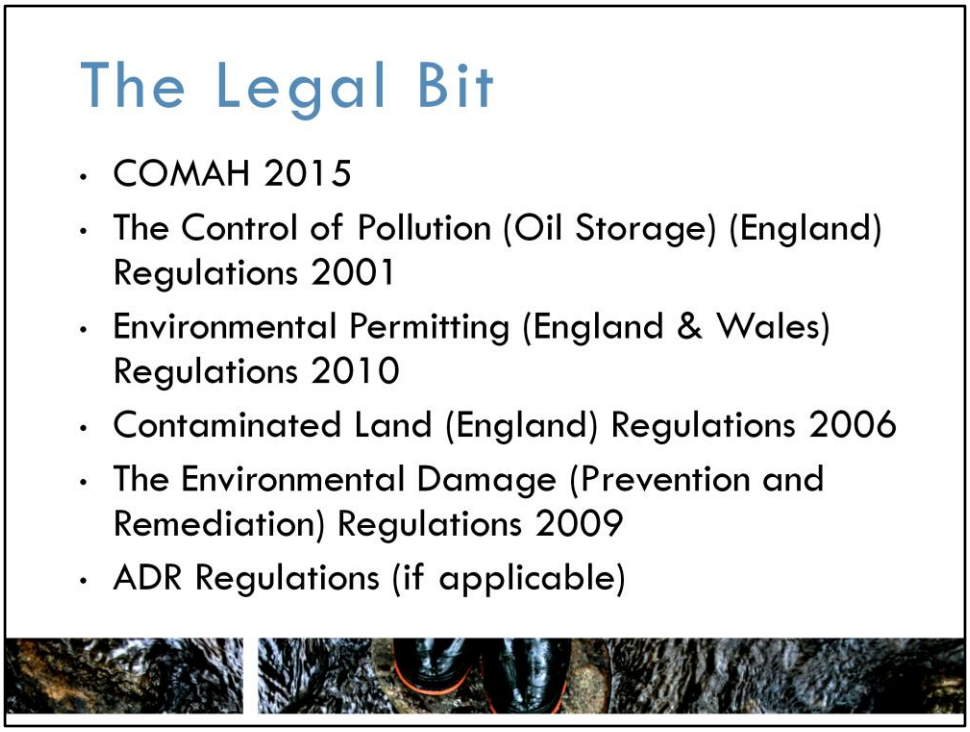
SPILL RESPONSE TRAINING

Judith Dix and Oliver Lockwood



Today we will cover the fundamentals of spill response:

1. I will briefly cover law (everyone's favourite!) and what your legal obligations are towards spill management.
2. I will then move on to how you plan to prevent spills from happening through planning and also producing a spill management plan.
3. We will look through the basic "how to" of how to approach a spill
4. We will look at some of the different technologies which are available for handling spills
5. We will do a practical exercise to practice what you have learnt in the "how to" section
6. And then finally we will cover what you should do after the spill has been controlled



COMAH 2015
The Control of Major Accident Hazards Regulations 2015 (COMAH 2015) are the specific legal requirements that relate to controlling major hazards associated with the storage, use or accidental generation of generally large quantities of hazardous materials. The Regulations particularly relate to the risks associated with incidents (such as toxic gas releases, major fires or explosions or releases of hazardous materials) which can cause serious danger to human health or the environment (whether immediate or delayed), inside or outside the Establishment concerned.

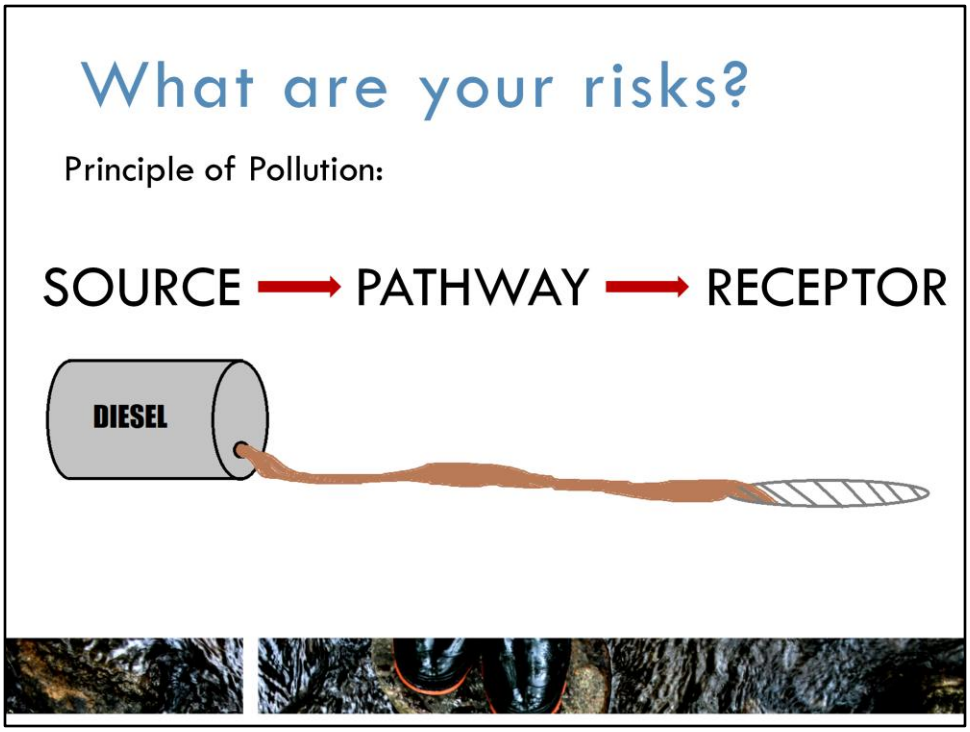
The Control of Pollution (Oil Storage) (England) Regulations 2001
For oil tanks, IBC's and mobile bowsers, the Secondary Containment System must be able to hold at least **110** per cent of the maximum volume of a single container. If more than one container stored in the same system, the SCS must be able to hold whichever of the following is greater:
• 110 per cent of the largest container's storage volume
• 25 per cent of the total volume of the containers
For drum storage, the drip tray must be able to hold at least 25 per cent of the total storage capacity of the drums.

Environmental Permitting (England & Wales) Regulations 2010
If a spill occurs, it is prosecuted under the permitting regulations.

Contaminated Land (England) Regulations 2006
Law against contaminating land with hazardous substances in certain quantities.

The Environmental Damage (Prevention and Remediation) Regulations 2009
An important point to note is that these Regulations are a 'backstop', only applying when something has gone wrong and there is an imminent threat or actual 'environmental damage' within the scope of the Regulations.

ADR Regulations
These are specific to vehicles transporting hazardous goods



Before you can start to plan how you will prevent or tackle spills, you need to look at what on your site could be at risk of causing a spill.

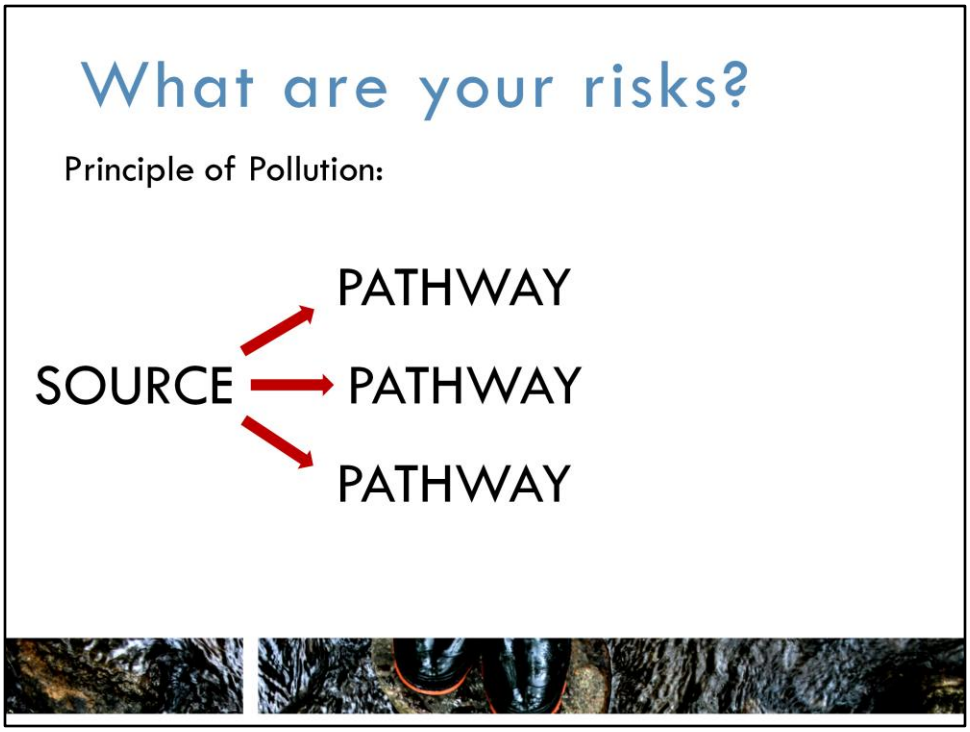
An easy way to do this is to look at one of the key principles of pollution, which is source, pathway and receptor.

The source is where the substance is released from, so in this example, Diesel has been released from a drum, due to the lid not being replaced correctly.

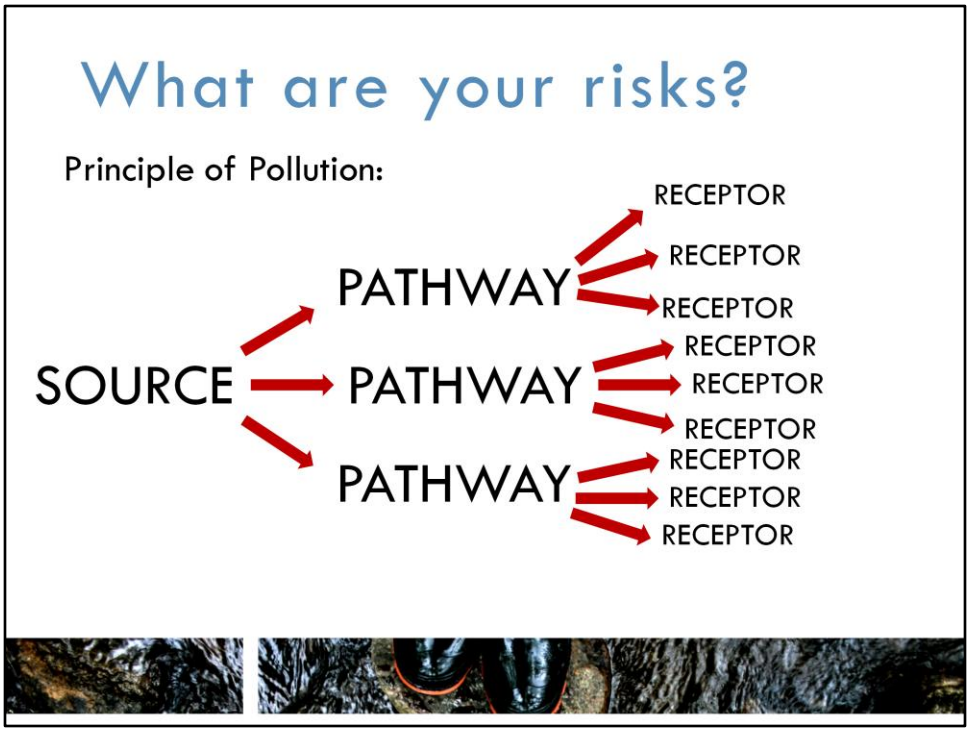
The pathway is the method by which the spill travels, so this may be across ground which has slight slope.

The receptor is what is going to be effected by the spill. In this case it is the drain and the water below which will become polluted.

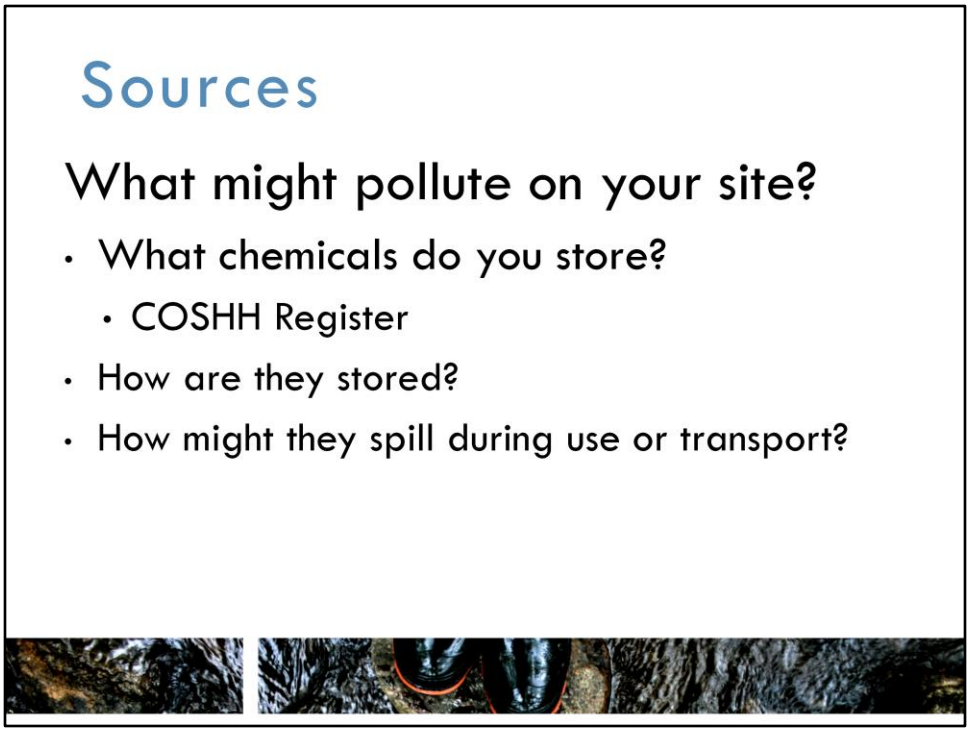
You may be thinking “the drain is the pathway and the surface water which is eventually polluted is the receptor”. This is also true, but in terms of the site you operate and what you can and can’t control, I think it’s useful to think of the drain as the receptor in this case, as after pollution gets in to the drain, it is (in most cases) beyond your control. So plan as though the drain (or wherever the pollution is no longer in your control) is the receptor.



Unfortunately, it is often not as simple as the drawing I have just shown you. Often, one source can go to several pathways. E.g. The spill may go in a few directions.



In the same way there may be several receptors for each pathway so there may be different locations it has gone to.

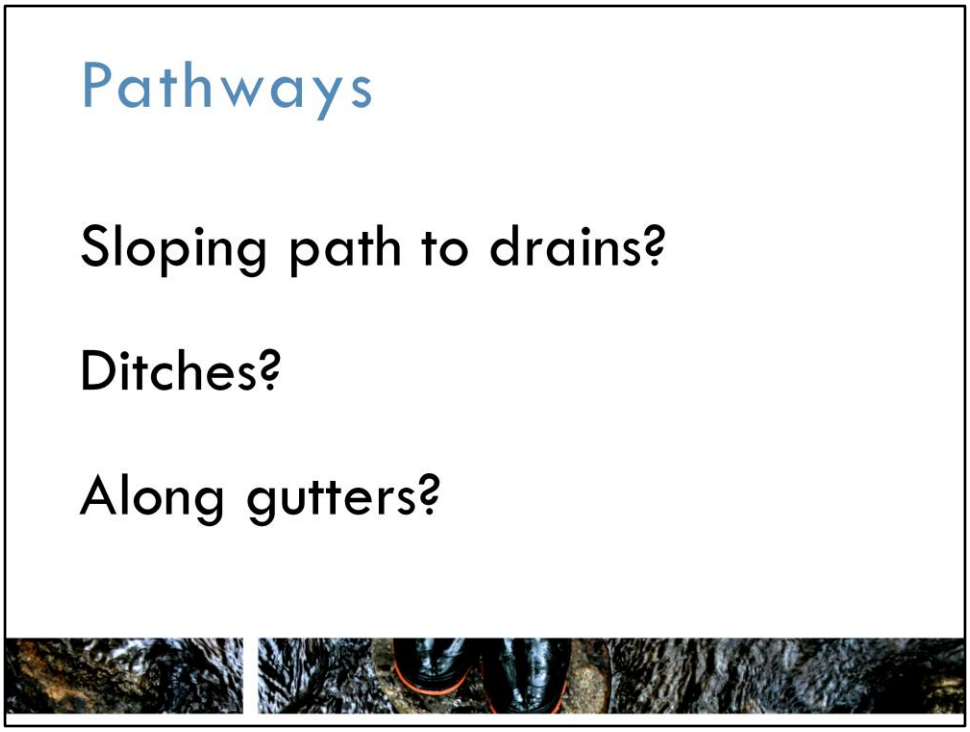


What is there on site? Have you got any chemicals on site, or any potentially polluting liquids.

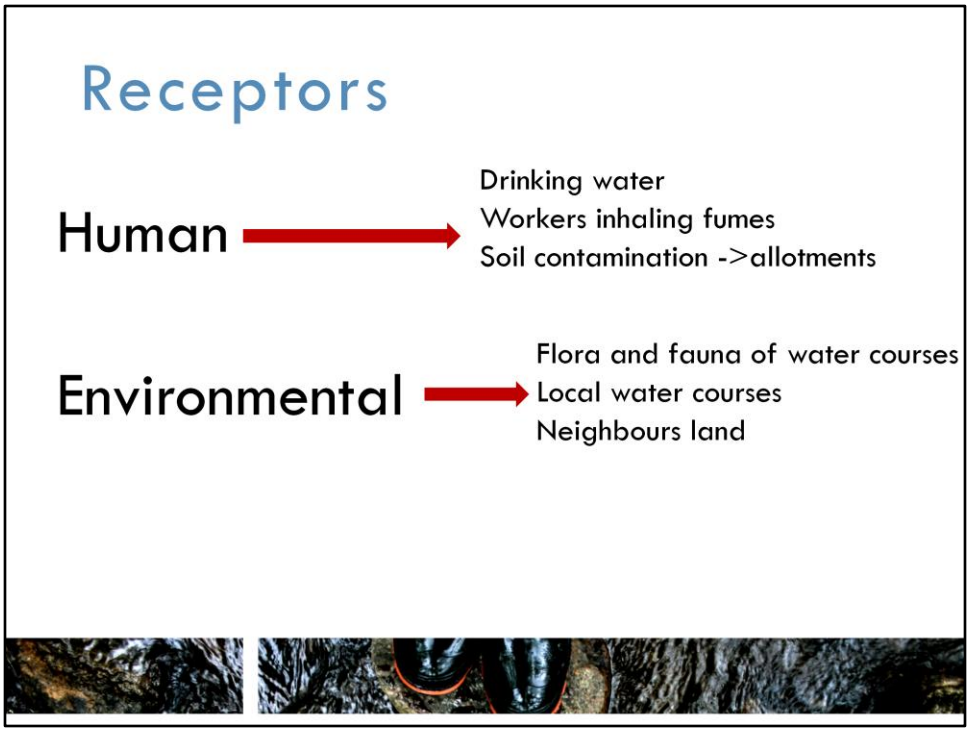
What volumes are they stored in, and where are they stored?

Using the chemical inventory that was generated for other plans is useful when creating a spill-prevention plan, because it can serve as a checklist to ensure that all chemicals and storage areas are identified and marked on a site map.
Purchasing records also can be useful – especially as a second check for facilities that change processes or chemicals frequently.

Also, do you have a lot of vehicles coming in and out of site which may risk spillage of fuel/coolant etc?



Can pollution travel across the ground at your site? Which direction will it travel in? Is it likely to collect in one spot. Could it travel from a high place to a low place e.g. Along guttering?



What are the receptors?

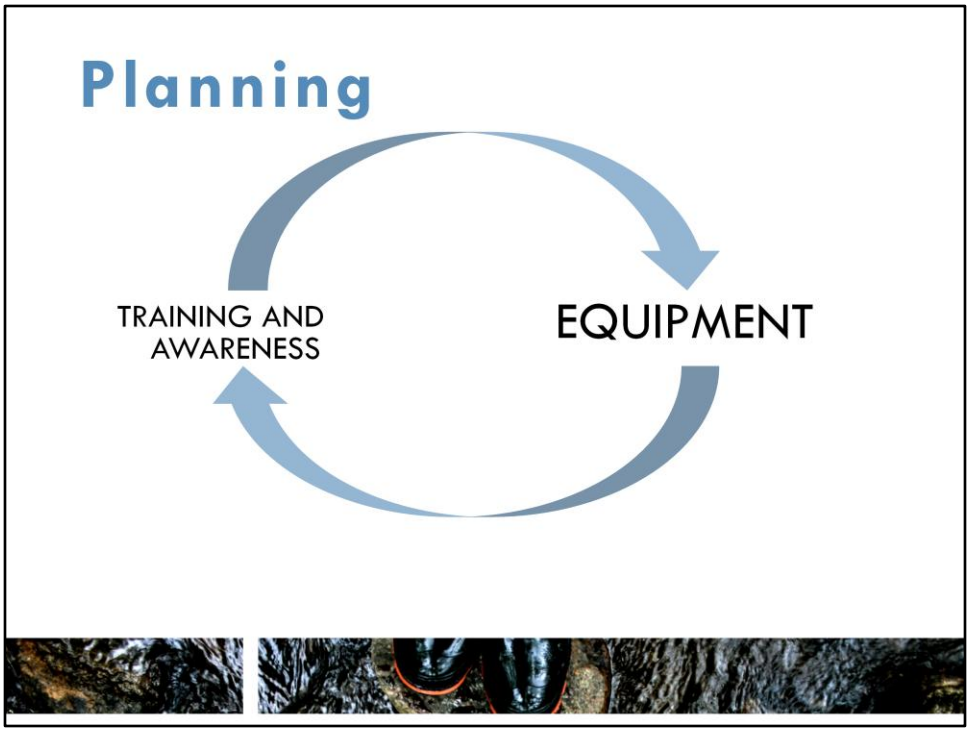
As discussed, receptors are different depending on what scale you are looking at.

They are vast and variable – to work out what your receptors are, you need some knowledge of the local area and environmental systems.

Prevention

- Store Chemicals in Covered Areas
- Prevent Overcrowding in Chemical Storage Units
- Ensure Chemicals Are Stored at or Below Eye Level
- Regularly Inspect Chemical Containers on Site for Leaks or Deterioration
- Safeguard the Transportation of Chemical Containers
- Implement Strict Decanting Procedures

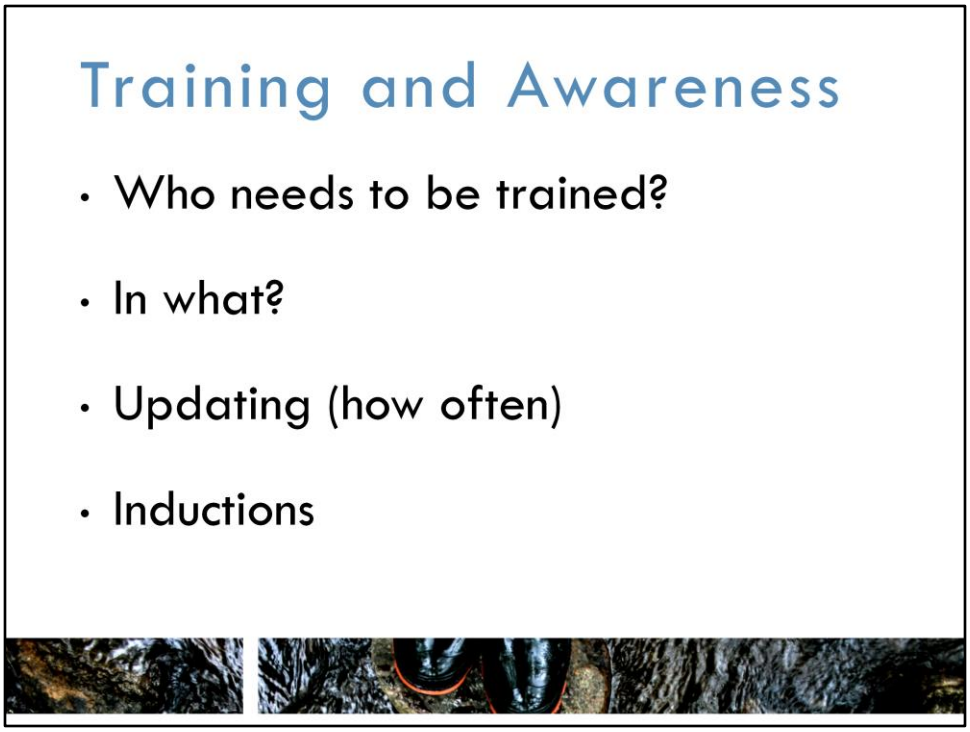
How can you stop spills from happening in the first place?



In order for your organisation to successfully address spills, two things are most important: organisational knowledge and appropriate equipment.

The organisation requires the correct equipment to address a spill, but there also needs to be organisational knowledge of how to spills.

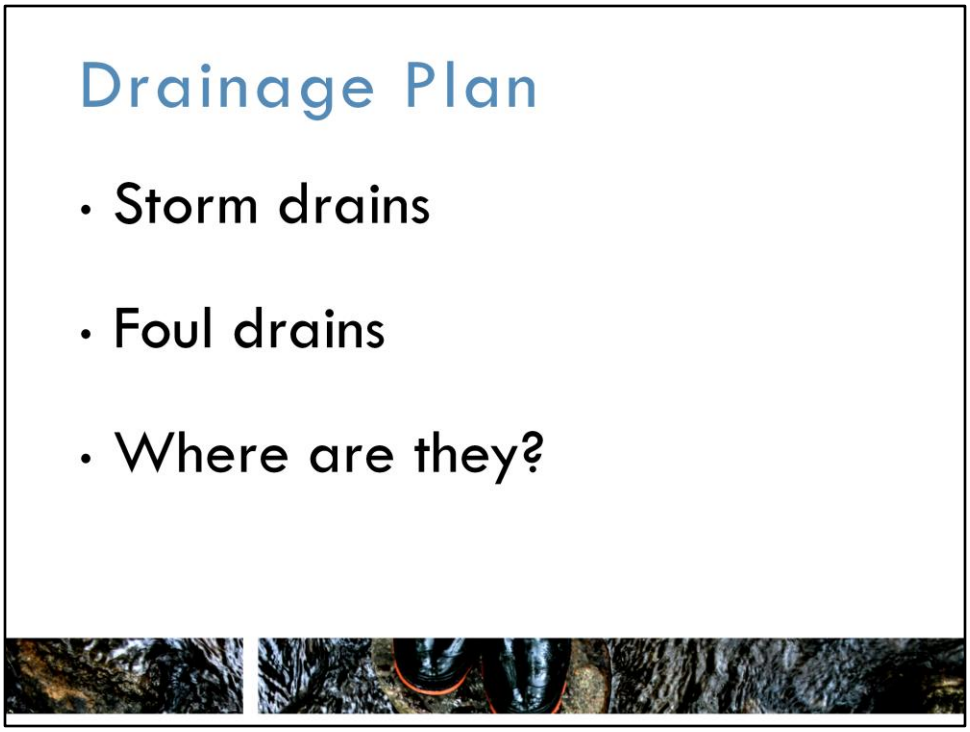
These two factors should inform all of your spill planning.



Training

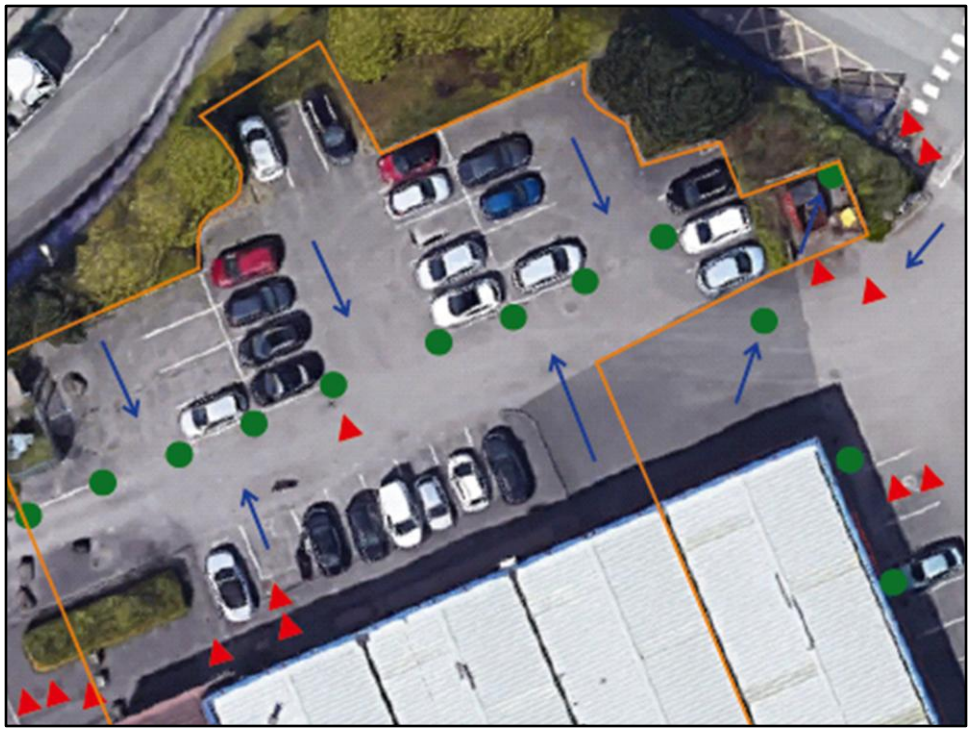
What you are doing right now is one of the key parts of spill response.

In determining a training programme, you need to work out WHO will address spills.
• Will it be everyone's responsibility to handle spills (i.e. Anyone nearby can address them)
• Or will there be one "spill response person/persons" per shift who will handle a spill.
• We would recommend that there is more than one person on site at any one time who can handle a spill, because most often they are a job for more than one person.
• It is best if even if not everyone on site knows HOW to use spill technologies, that they know WHERE the equipment and spill response plan is, so they can locate them to assist others.
• The kind of spills (e.g. Oil, chemicals) will potentially change, based on the types of substances you use. Will those trained need updating to reflect the new substances? Will they need a refresher?
• Could spill response training be included in inductions?



Drainage Plan

The next important step is to have a drainage plan easily accessible in case of a spill. A drainage plan ensures that you know where the boundaries of your site are, so you can inform neighbouring sites if pollution gets in to their site.
It also helps you determine the direction of flow of a potential spill and which drains go to which water courses.



Here is a real example

The arrows denote the direction the fluid would flow in. If you need to assess this on site, you can check using clean water or even a ball.

The green dots are storm drains, which go to surface waters or controlled waters managed by the Environment Agency.

The red triangles pertain to fowl drains (or sewers) which are controlled by the water undertaker (in this case Severn Trent Water).

The orange line is the site boundary (what is legally controlled by the company).

HANDLING A SPILL

PROTECT

↓

CONFINE

↓

CLEAN UP

↓

DISPOSE

PROTECT

Choosing the right protection (and also spill kit) depends on what has spilled

Based on your spill response plan, and COSHH Assessments, do you need to protect....
- Your feet?
- Your eyes?
- Your hands?
- Your respiratory system?
- Your skin?
- Do you need to be visible?

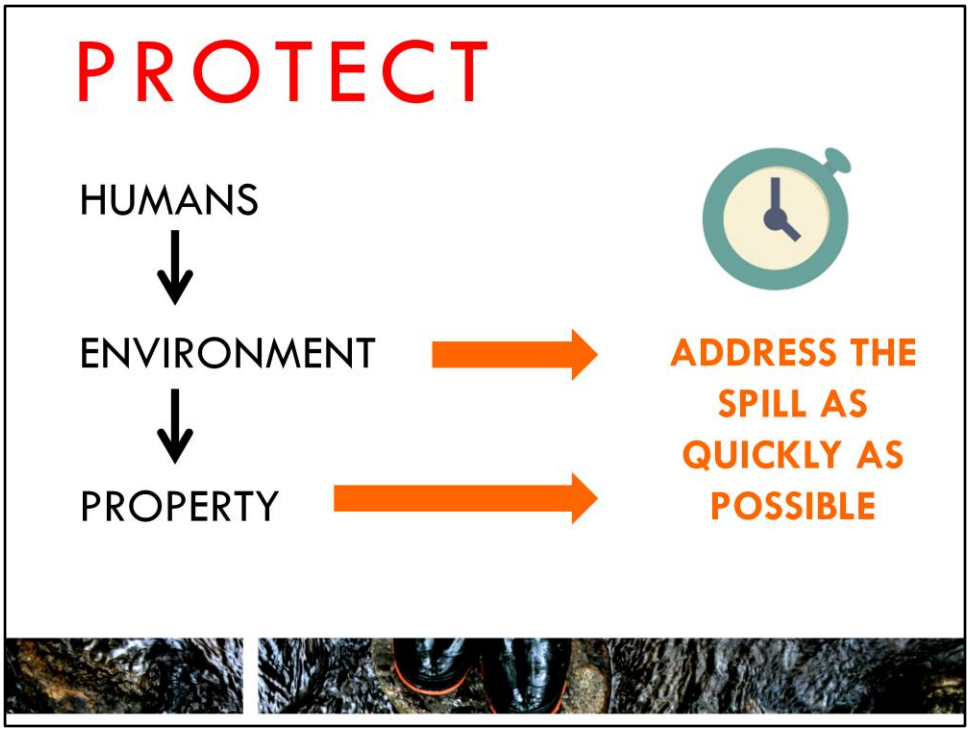
For most substances, you will be ok using just gloves, a hi-vis vest and safety boots. So that your hands are not in direct contact with the substance, you are visible to people moving around the work area, and your feet are protected in case you have to step in the substance.

Other chemicals may call for more PPE, such as an air purifying respirator, or dust mask. You may required gauntlets or a hazmat suit to protect your skin more effectively.

Depending on what has spilled, the required PPE to handle this substance will be detailed on the COSHH Risk Assessment. If you aren't sure what has spilled, use the precautionary principle and assume that it is the most dangerous chemical you use. It is better to use too much PPE than too little. If you STILL aren't sure, it's best to leave the spill to an expert. It may be that you use two dangerous chemicals which require very different approaches.

You should only address a spill if it is safe to do so and you have the correct PPE and the correct equipment to clean up the spill. If you aren't sure DON'T TRY TO TACKLE THE SPILL. Inform your manager or contact a specialist spill response consultant.

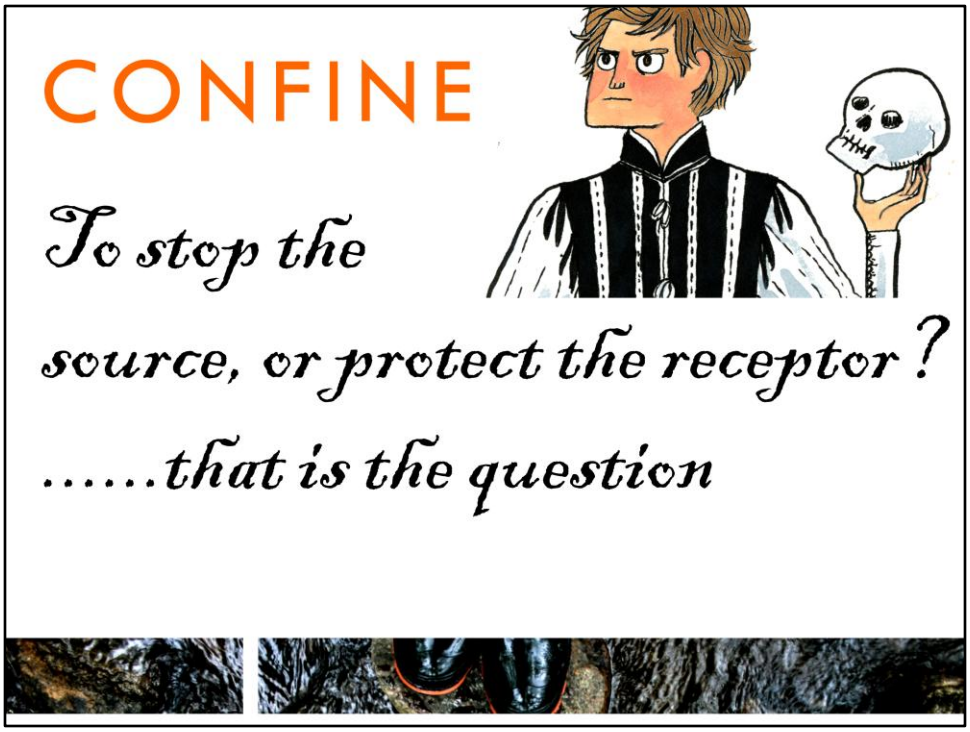
Make sure others are safe also. Cordon off the area around the spill so that foot and vehicle traffic cannot go through it. Inform those in the nearby vicinity verbally.



If safe to do so, you should try and address the spill in a timely manner. It will be quicker if tackled with other people if you can find someone.

However, stay calm and don't run. If you run, you may fall, or there may be spilled material you have not seen which presents a risk of slips.

Rushing also means you may not work as effectively as you would otherwise.



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Stop and Look

Is the spill entering a drain?

Is it about to enter a drain?

Is the spill moving slowly?

Do multiple drains need addressing

When looking at tackling a spill, you need to make a decision upfront as to what order to do things in. One part of this is deciding whether to stop the source of the spill first, or protect the receptor (such as the drain) first, then stop the source.

This really depends on the flow of the spill and how easy it would be to turn off. In an ideal world, more than one of you can tackle a spill, so one person can turn off the source, and one can begin to protect the receptor at the same time. But if you are alone, you need to decide which to do first.

If the source is causing the spill to move faster due to pressure then it is best to tackle the source first. If, for example, a valve has been left open and this is causing large volumes of liquid to flow quickly, tackling the clean-up of the spill will be much easier if you turn off the valve, as you will not have to dam up and absorb large amounts of fast-flowing liquid, which could cause spill equipment to fail.

On the other hand, if the spill has been caused by a passing accident, such as someone holding the container at a bad angle and liquid dripping to the ground, then the source is gone and only needs to be addressed once the spill has been cleaned up.

Use common sense and time management skills. This must be assessed on a case by case basis and I don't believe there should be any hard and fast rule for this decision.

If you can judge whether you can protect a receptor with the equipment you have if you act quickly, then go for the receptor.

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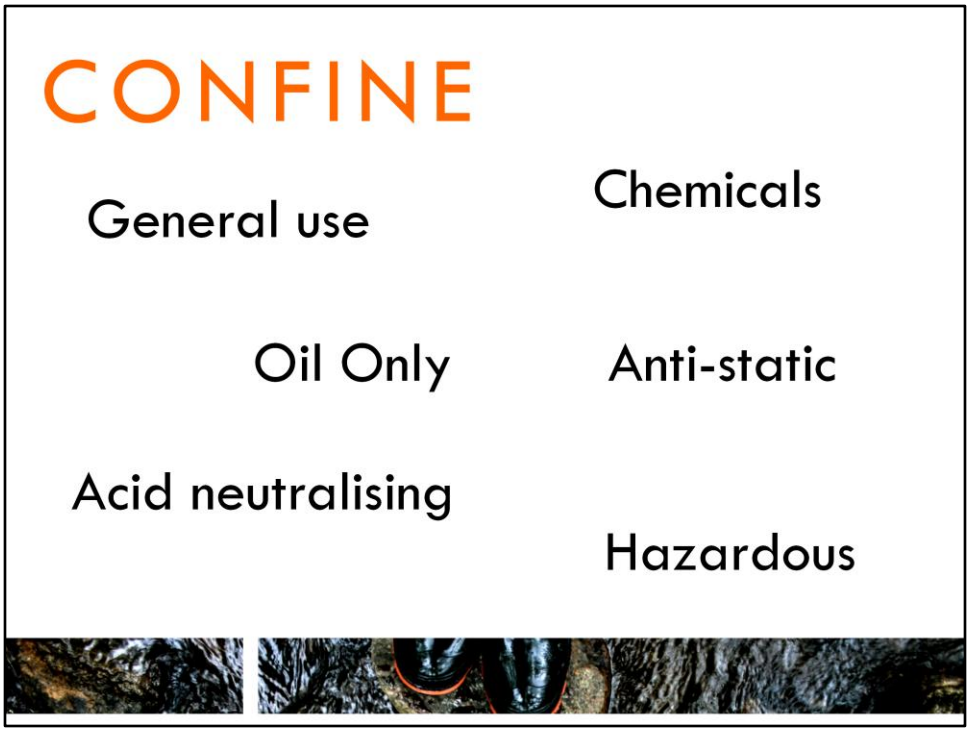
Once you have decided what to tackle first, it's time to grab your equipment.

If you have decided to tackle the source first, you may need special equipment to upright a container, or plug a hole, such a sealing putty or a re-usable sling. You may need a key or access code to turn off a valve. Once this is complete, grab your spill kit.

You should be aware based on early assessment what has been spilled (or at least have a good idea).

We will now have a look at what you may find in your spill kit, and how to use the items.

Also, many hands make light work (and also watch your back to keep you safe) so grab at least one other person if possible.



There are many different types of spill kit, tailored to different types of spill. These can be specialised to the type of chemical which has spilt, e.g. Acid neutralising or oil only.

There are also kits for different spill sizes and locations.

These range from bags (which would most likely need replacing after one spill) to bins containing lots of equipment. There are also portable kits for vehicles, specialising in spill response to spills from vehicle fluids such as oil and coolant.

If you are packing your spill kit, it's important to pack the kit in the order in which you will need to use it

CONFINE

PADS
- Easy to use
- Cheap
- Fairly universal

ROLLS
- Similar to pads
- Offer more coverage

CONFINE

BOOMS

- Mostly used to contain oil on water
- Can also be used where there are high volumes of water

SOCKS

- Can be wrapped around leaking machinery
- Can be used as a barrier to drains

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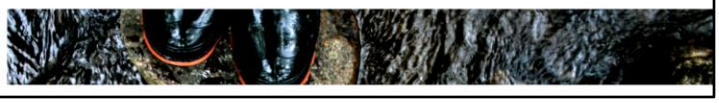
PILLOWS
- Used for large volumes
- Repetitive drips

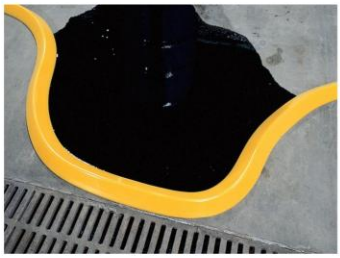
GRANULES
- Ideal for first response emergency
- Small spill cleanups
- Stabilisations of free liquid



CONFINE

CLAY DRAIN MATS

- Used for large volumes
- Repetitive drips



SOLID DYKE

- Heavy
- Re-usable
- Durable
- Flexible polyurethane

CONFINE

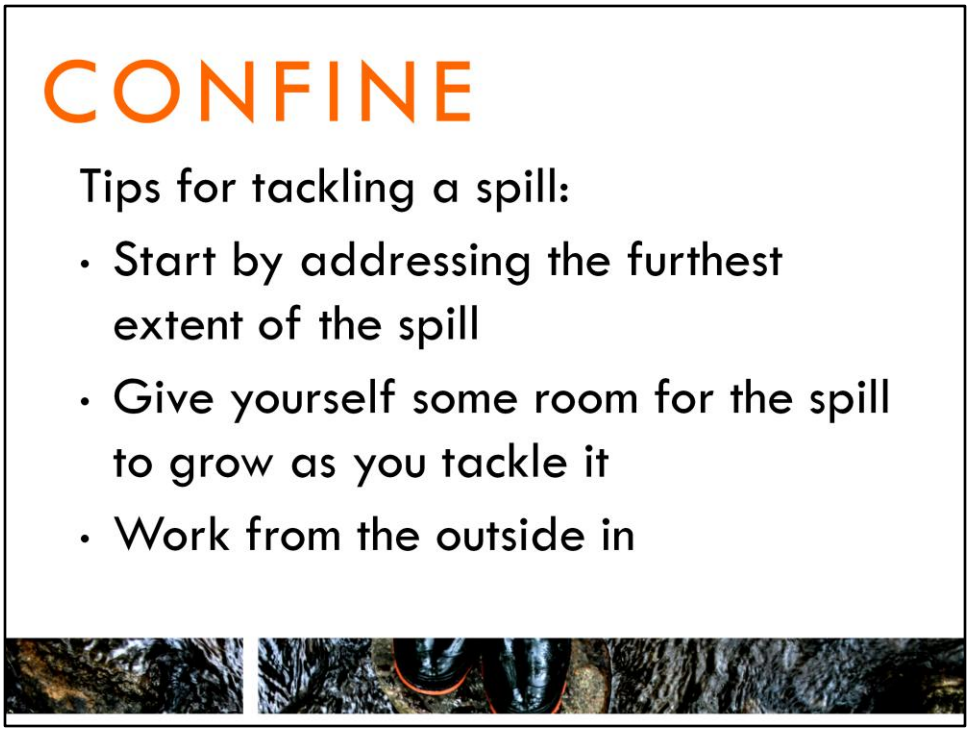
PIPE LEAK DIVERTERS

- Can channel leaks to a collection chamber
- A bit fiddly to attach!

ROOF LEAK DIVERTERS

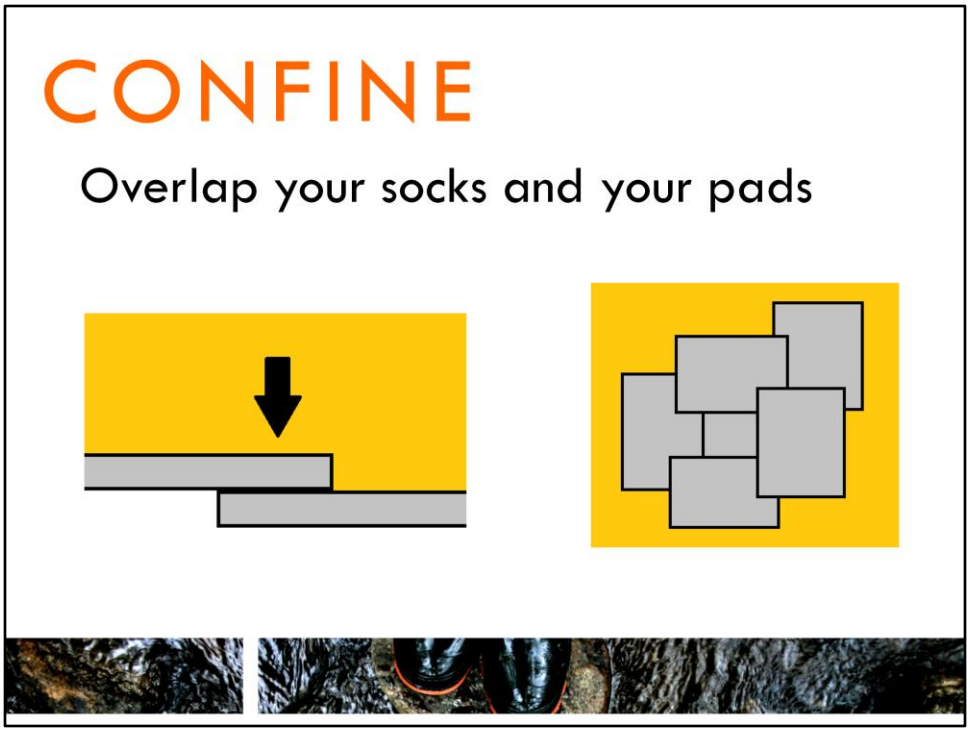
- Like an upside down umbrella
- Easy and quick to deploy
- Optional hose

There are many, many more types of spill response equipment.



It is advised that you tackle the outermost extent of the spill first. In most cases this will be using absorbent socks to surround the spill. Don't forget to leave yourself room, as the spill will continue to flow as you work on placing the socks.

If you have one, before you tackle the spill you could throw a drain cover over any drains which are at risk.



When using socks, be sure to overlap them so that gaps are avoided. Any overlap points should be at a right angle to the direction of flow. If they are parallel, there is greater risk of liquid escaping through the gap between the socks.

Overlap your pads to avoid gaps also.

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If you want to use absorbent granules, use absorbent granules generously, around edges of spill as an immediate response. Ensure you know where they have been placed. Sweep away loose granules and dispose of appropriately.

CLEAN UP

Thoroughly clean the spill as soon as the source has been stopped.

Once you are happy that the spill has been contained, it is time to clean up the residue. It is advisable to use disposable products from your spill kit to complete this task, so that they can safely thrown away after, without any risk of residues left behind for other users.

Use pads or pillows to absorb excess fluid. Once absorbed, you can use these same pads and pillows to wipe up the residual product.

An appropriate cleaning fluid can be used to finish the removal of any stains.

If you have used granules, these should be swept up with a dedicated spills broom once saturated with liquid.

DISPOSE

Everything disposable which you have used to clean up the spill should be put in to a bin bag (usually these are provided with your spill kit) and kept in a dedicated spills bin. More often than not, the waste will be hazardous, but the MSDS for the chemical should give you information on whether this liquid is hazardous or not.

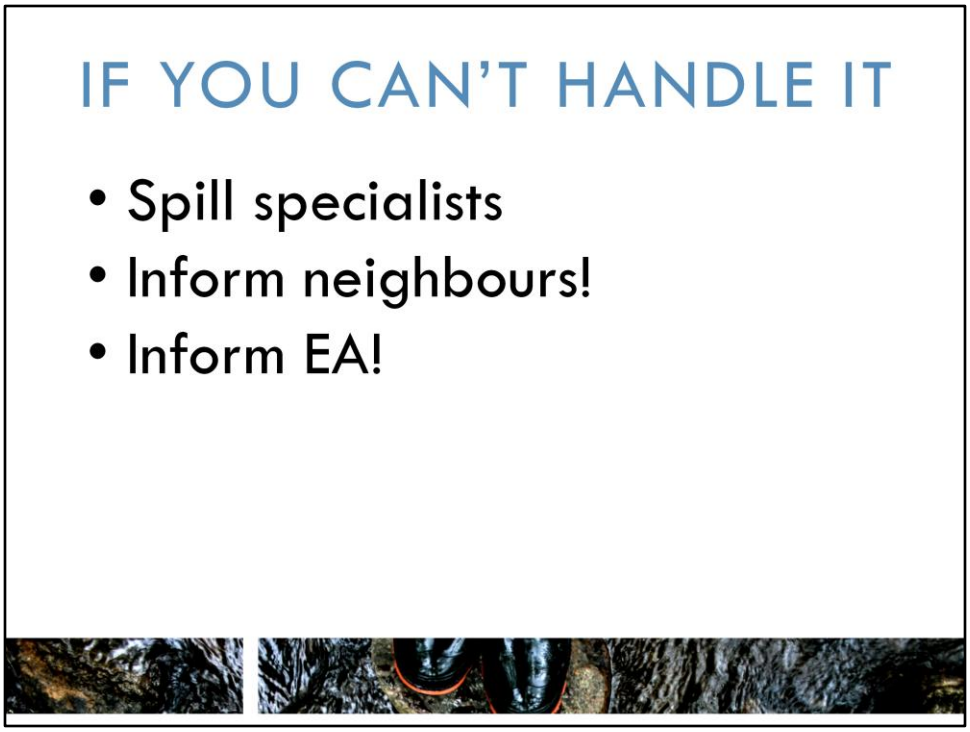
A waste carrier with a licence to carry the waste should remove the waste within 12 months, and either a waste transfer note or a hazardous waste consignment note should be filled in by both parties.

PRACTICAL EXERCISE

Once the spill has been cleaned up, you need to think about who to tell.

These are your internal and external stakeholders.

Also, does any sort of report need to be written detailing the spill and corrective actions taken? What is the procedure so that the next time there is a spill it is handled even more effectively?



If you cannot tackle a spill you need to get outside help. There are specialist spill consultants who can help you with clean up, to helping you through communications with the EA, and future monitoring.

You need to tell the stakeholders we just mentioned about the situation as it will effect them too.

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