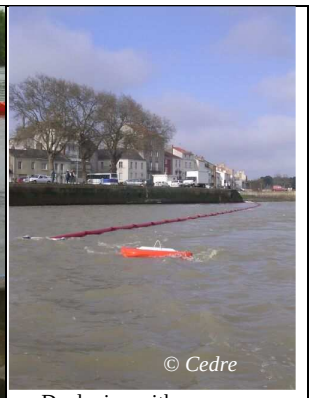
USING FLOATING BOOMS IN A RIVER

SCOPE

Pollution: all types
Pollutant: liquid to highly viscous
Inland waters

Boom on the Gave de Pau river

Boom on the Rhone canal



Deploying with a paravane

EQUIPMENT NEEDED

For containment: floating boom, moored ashore (stakes, ropes), on the sea/river bed (sinkers, anchors, chains)
For deployment: motor boat (on wide rivers), paravane (in the event of current)
Extra equipment: walky-talkies, VHF sets, ropes, extra shackles, etc.

DESCRIPTION/PRINCIPLE

Consists of deploying one or several manufacturer-made floating booms in a configuration/mode that will prevent the oil from going "downstream" and deflect it towards a recovery site on a river bank. If no manufacturer-made floating boom is available, envisage makeshift booms, cf sheet "*Containment in inland waters with makeshift floating booms*".
The choice of the location for anchoring the boom will depend on current speed and transverse current components. The containment system will be all the more efficient if the current is weak. The boom must never be laid across a watercourse at right angles to the river banks, it must be laid in deflection mode (at an angle) so as to guide the pollutant towards the bank and limit current components perpendicular to the boom: cf sheet "*Protecting sensitive coastal areas using deflection booms*".
Several booms can be deployed simultaneously on the same site. This solution will improve the efficiency of the protection system in the event it might be jeopardised by strong currents. Laying several booms "one after the other" across a relatively narrow river will catch any leakages and avoid having to lay anchors in the river which will afford quicker response. Laying booms in "chevron mode" enables you to boom a river using very few anchors but will require two recovery sites (one on either side of the river) and will as with the oblique mode, be a hindrance to shipping. Whereas laying booms in "herringbone mode" will not hamper shipping but will require extra logistics in terms of laying anchors and recovering the pollutant on both sides of the river.

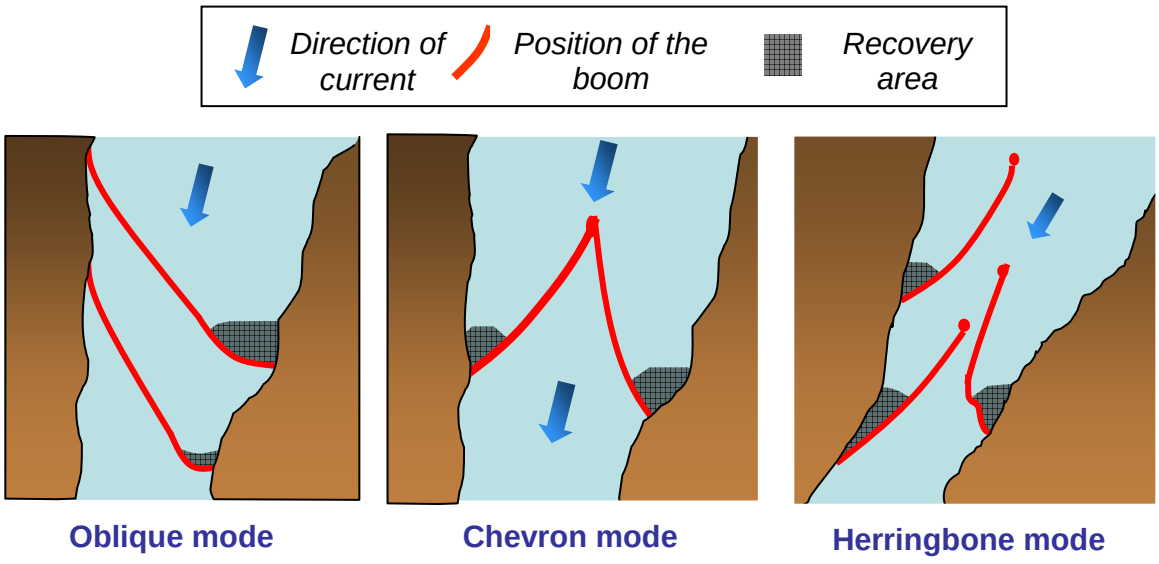


diagram © *Cedre*

PTO

DESCRIPTION/PRINCIPLE (continued)

Laying and deploying booms on a relatively narrow river will not require motor boats, as responders will be able to cross on foot if the water is shallow and current slow moving. Alternatively the responders can use a towline gun to fire the ropes to colleagues on the other side to secure the booms. But on wider rivers, a motor boat will be needed.
In either case, no attempt must be made to tow the boom up the river or to secure it too tightly for fear of damaging it.
Anchoring the boom downstream will require two anchorage locations (left hand photo): the main anchorage location will be a few metres from the end of the boom (ring or sinker, anchor, stake…) that will take the strain in addition to another anchor at the end of the boom so that it can ride the tide and form a pocket for the pollutant to accumulate in prior to recovery. Between the end of the boom and the river bank, oil can be prevented from escaping by a fire hose spraying a counter current, either that or using a sorbent boom or else the use of a shore-sealing boom.
In the event of a current, a paravane can be used (right hand photo) to deploy and anchor the boom using the motion of the current thus avoiding the use of concrete sinkers or boats for deployment.
Once the boom has been laid, and depending on how strong the current is and whether or not there is floating debris in the river likely to damage the boom, there will be a need for permanent surveillance and maintenance: cf sheet "*maintenance of booms in operation / use*".
Once response has been terminated, refer to "*cleaning, repairing and reconditioning booms after use*".

CONDITIONS OF USE

Pollution: liquid to viscous oil. Due care will have to be exercised with volatile products (petrol, gas oil, etc.) because if responders breathe in these vapours, their health may be affected and personnel may even run the risk of a fire or an explosion (cf "Observations" below).
Site: technique not appropriate:

- if current exceeds 2 knots (can vary with model), or 3 knots for the paravane system;
- if river is narrow, (< 3 m) and water depth very shallow (< 0.5 m to 1 m, variable depending on boom draught) ☞ build makeshift booms, cf data sheet "*Containment in inland waters with makeshift floating booms*".

PERFORMANCES

Pace: the speed with which deployment will occur will vary according to site characteristics (accessibility, width of the water course, current speed,…), configuration (length of boom, number of anchorage points…) and available deployment assets (type, lead times, personnel training…).
Efficiency: is going to depend on whether the boom matches local hydrodynamic conditions, the importance of current speed for boom laying, oiltightness where the boom meets the river bank and floating debris. It will therefore depend on a prior boom-laying plan and validation via an exercise involving all the response assets so as to test the entire system.
Implementation: anticipate installing anchorages prior to the spill and ensure correct interface oiltightness of the system (buoys / booms, deflection boom / shore-sealing boom).
Waste: pollutant and oiled macro waste.

OBSERVATIONS

- Decide not to contain and recover in the event of fire or explosion risks (oil with low flash point) and enhance evaporation and natural dispersion unless the slick seems to want to drift towards sensitive or built-up and populated areas. In this case, use booms to contain the oil and if possible use fire booms the spray low or average expansion foam to cover the slick and reduce inflammable vapours. The recovery leg will thus involve a floating suction head to recover the oil from under the layer of foam ("Delta suction head"). Use sparkproof equipment. Refer to "*Oil recovery in harbours or industrial areas*" for more details on recovery.
- If shipping cannot be stopped, choose a herringbone boom laying configuration or include an opening on a section of boom to avoid deliberate damage by users.
- For navigable waterways, shipping will generate a powerful bow wave that will tend to exert strain on the anchorage points: have ships sail slower and install heavy duty anchorage systems.
- Lay a protective coating on the bank to avoid tearing or otherwise damaging the boom when it is being deployed and retrieved.