### Understanding

# Chemical Pollution at Sea

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### ntroduction

The chemical industry is today at the hub of the global economy and must often overcome vast distances between production and consumption areas. These geographical constraints require large volumes of hazardous substances to be transported, often by sea. Shipping generates risks which are steadily rising, due to the

ever-increasing size of vessels, together with the pressure of world markets.

In the event of an incident, these risks lead to different problems to those encountered in the case of oil spills. The threat of a chemical spill is a concern for many stakeholders (industry leaders, politicians, environmentalists and citizer,

### www.chemical-pollution.com

Today, the internet has become a key method of communication. Young generations, as well as the wider public, now use smartphones and tablets on a daily basis to find information and gain understanding in different fields. With this as a backdrop, the Centre of Documentation, Research and Experimentation on Accidental Water Pollution health, the environment and the economy. (Cedre) and Transport Canada naturally decided to pursue their collaboration by developing a website devoted to the issue of chemical pollution at sea. In 2011, a learning guide was released on chemical pollution at sea composed of 2 posters and a booklet. This learning package is intended for bulk cargo. A quiz, with different levels of difficulty, offers 12 to 18-year-olds and their teachers, but also for journalists, users the chance to test their knowledge on this theme. A

This website (www.chemical-pollution.com) is divided into six major sections: an introduction to chemistry and a few

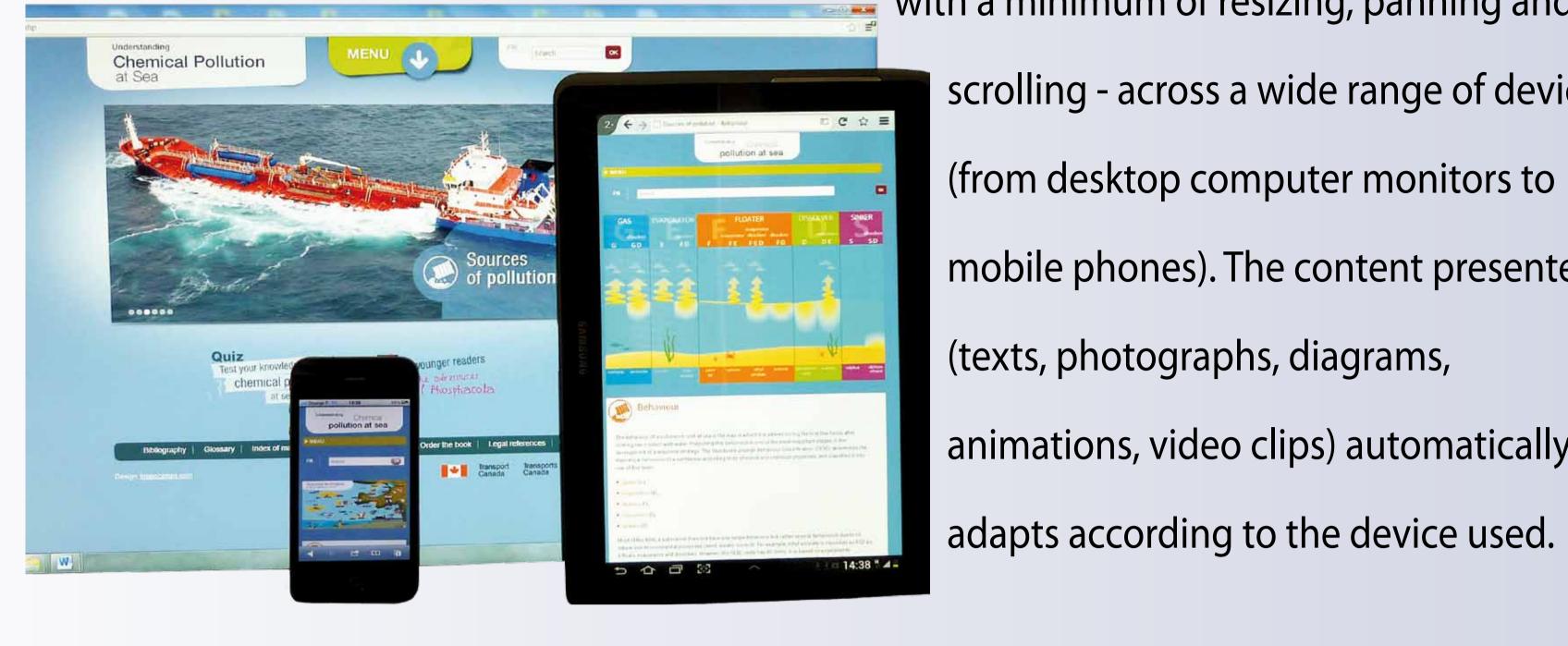
examples of its uses; different aspects of shipping, such as the types of ships used and regulations; the main sources of chemical pollution at sea; spill prevention and preparedness; the different response techniques, systematically illustrated with examples of past incidents; the impact on human This interactive website features a series of original animations. Users can, for instance, discover the organization of a port terminal, view the behavior of different chemicals, and understand techniques used to respond to a spill of those potentially involved in spill response and the general character named Phosphacola accompanies younger users on a journey to follow a chemical from its extraction to its end use, presenting its transport across the world's oceans

and the spill risks to which it may be exposed.

A particular effort has been made to make the site compatible to smartphones and tablets. Responsive web design (RWD) is a web approach aimed at crafting sites to provide an optimal viewing experience - easy reading and navigation

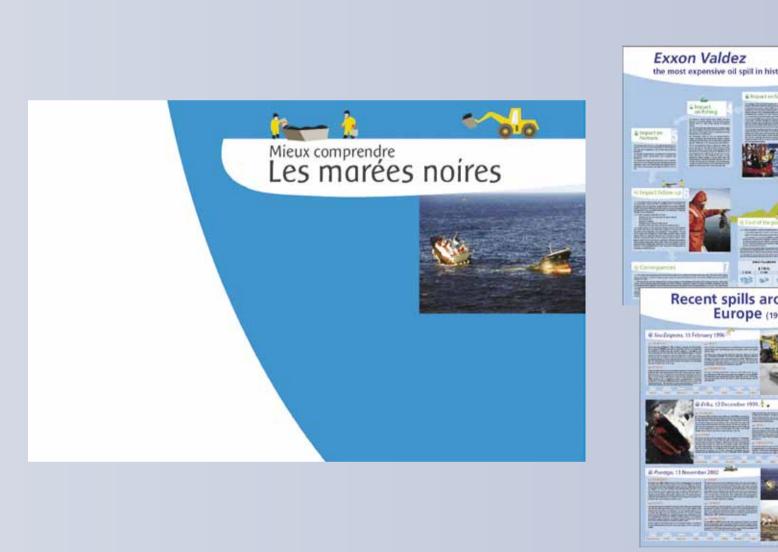
> with a minimum of resizing, panning and scrolling - across a wide range of devices (from desktop computer monitors to mobile phones). The content presented

(texts, photographs, diagrams, animations, video clips) automatically



It is therefore essential to have concise, comprehensive and educational information on this issue. Today, very few documents on this subject exist worldwide.

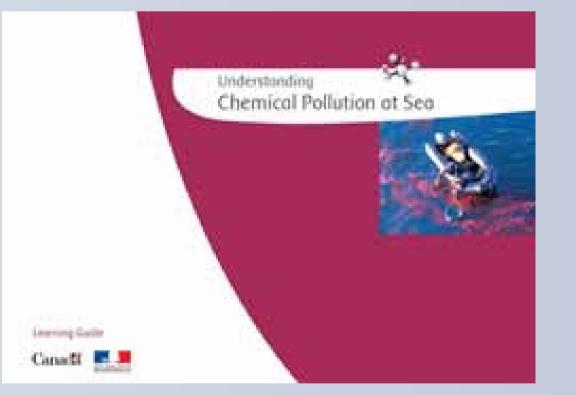
In 2008, a learning package entitled "Understanding Black Tides" about oil spills was produced by Cedre and funded by Total.







n 2012, a learning guide on chemical pollution at sea was released by Cedre and Transport Canada. "Understanding Chemical Pollution at Sea" consists



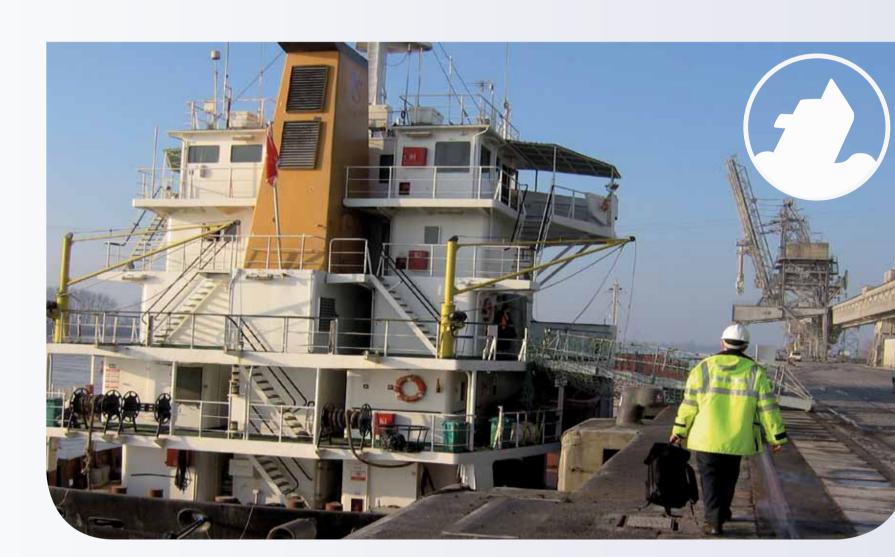
of a learning guide of more than 90 pages with two posters and is intended for 12 to 18-year-olds and their teachers, but also for journalists, those potentially involved in spill response and the general public.





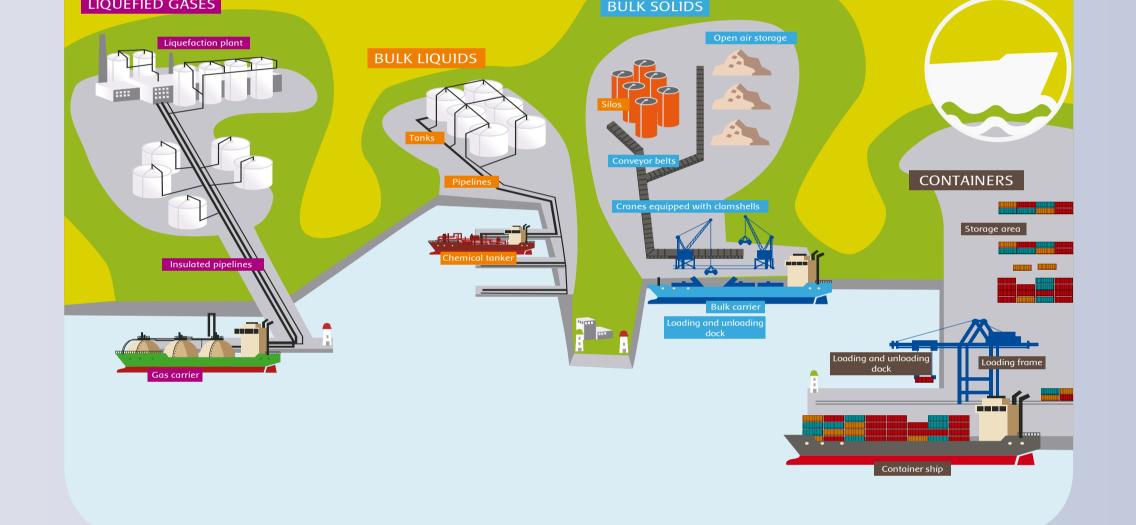














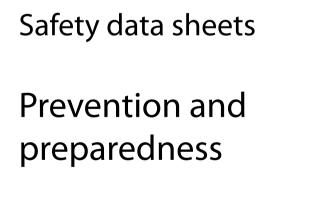
Transport Transports
Canada Canada
Cedre

Test your knowledge of chemical pollution

at sea

The advantage of Phosphacola

Chemistry and industry Classification **Examples of chemical** 



Organization framework Contingency planning Operator training Protective equipmer Ship inspection



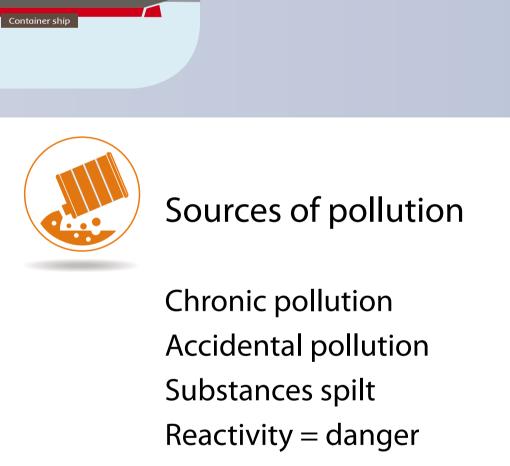
Concept of HNS Shipping routes



General methodology Situation assessment Decision-making

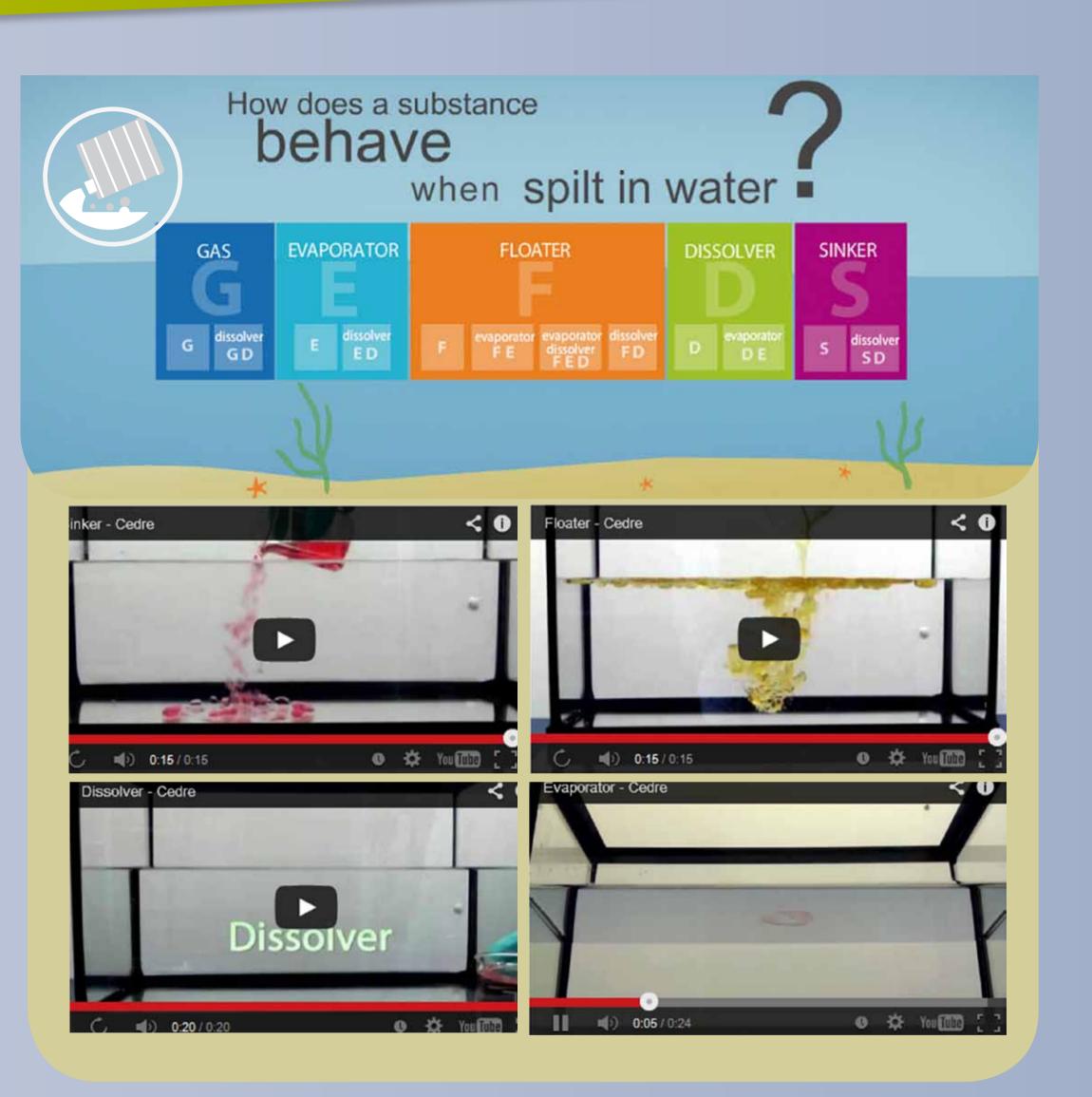
**Emergency measures** Bulk cargos onboard Bulk cargoes released Response to container and

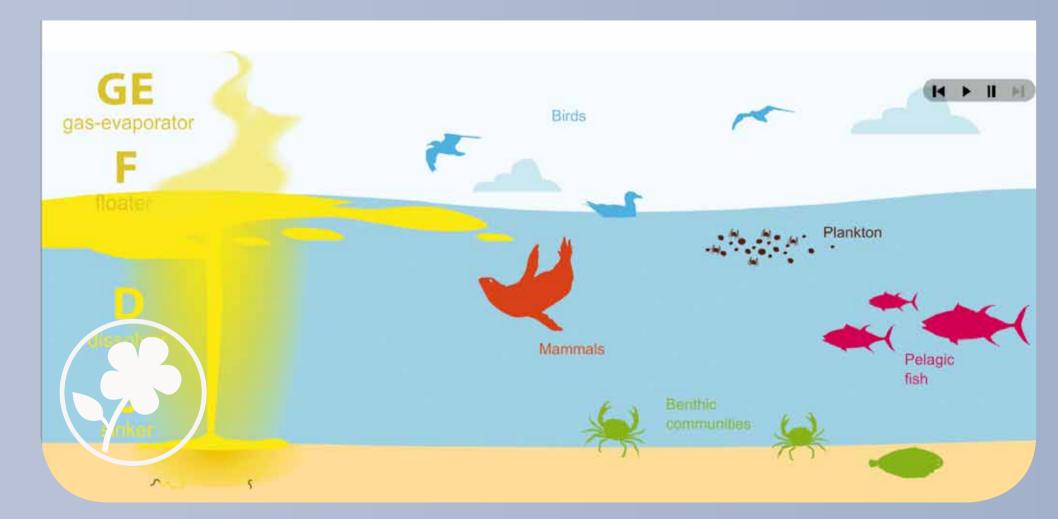
Waste management





Health impact Environmental impact **Economic impact** 





## onclusion

It was felt by Transport Canada and Cedre the importance to explain objectively to young generations the realities and challenges of HNS spills and their consequences. It is important to present the facts of the matter clearly and simply. The resulting websites present current

knowledge of the behaviour of Hazardous and Noxious Substances (HNS) at sea, the organisation in place to respond to a spill, and the medium- and longterm consequences of an HNS interesting addition to this collection... spill for the environment

as well as maritime

activities. Today, the internet is a rapidly expanding medium, very well known to young people, which can be used to communicate important messages. One of the main challenges of this project was to create a responsive web design in order to adapt the content to the many devices that can be used to surf the web today. In the wake of "Understanding Black Tides" and "Understanding Chemical Pollution response methods and resources at Sea", new documents on Debris at Sea or Spill in Cold Area could be an

and economic

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