

SUMMARY

Based on a study carried out by the NAVS for the German Environmental Agency this report represents an attempt to summarize the knowledge in the Federal Republic of Germany and worldwide concerning the control of hazards from discharged oil and other liquid chemicals after casualties on and in the hydrosphere. Due to technical reasons control measures can be classified into passive and active methods, a division which has been adopted for this report, too, namely

part I : passive means: booms and barriers,

part 2: active means: recovery devices,

part 3: other means: dispersion, and

part 4: control of sinking and/or sunken chemicals.

In the first part not only the behaviour of liquid chemicals on water will be evaluated, but also the physical fundamentals for the functioning of booms and barriers will be discussed. Some of widely used definitions and relations (such as the relationship between the blocking of liquid chemicals and the draught of the boom or the efficiency) will be corrected. The discussion of the physical fundamentals is presented as universally understandable as possible and completed by practical advices for the deployment of booms.

The second part is characterized by the attempt to standardize recovery devices based on the applied physical fundamentals. Four such classes could be identified which have been used for the classification of pick-up devices. Again the basic physical fundamentals have been presented in that way that application possibilities can be deduced. The evaluation showed that practically only those means that utilize the adhesion and the hole-in-the-water-principle can be operated with sufficient efficiency which reflects the state-of-the-art in equipment worldwide. Special attention has been paid to hybrid systems which utilize both, passive and active means.

In the third part the basics of dispersion of and other floating liquid chemicals are discussed. It can be shown that mechanical dispersion has the same effect as chemical one especially recognizing the necessity for applying a mechanical agitator anyway when using dispersants effectively. This calls chemical dispersion in general in question.

The fourth part deals with the behaviour and control possibilities of sinking and/or sunken liquid chemicals. Contrary to the general opinion, that once disappeared from the surface liquid chemicals cannot be controlled it has been found that under certain conditions even such chemicals can be herded and recovered. It all be shown that the practically the same means can be applied as for the recovery of floating hazardous substances.