



# ECORYON

■Description

The ground improvement method using a universal boring (CurveX method) which we have developed could evaluate the safety of the injection material with assuming to apply for under the shore protection. The material which we used is Ecoryon (a patent technique) whose main agent is silica, and categorized to the special neutral or acid water glass. Ecoryon has the property that the pH is low in an early stage, but return to neutral along with the gelling.

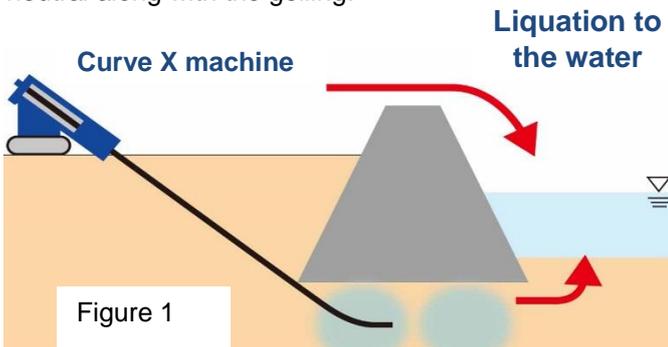


Figure 1

■Description of Safety Assessment Technology

Chemical Grouting Co.,Ltd possess the feeding techniques and know-how which can support the bioassay and safety assessment techniques, also has the facilities which can adapt various test trial conditions. (Figure 3)

■ Bioassay / Safety Assessment

To investigate the influence to the aquatic organism, acute toxicity test(JIS-K0102 and test standards of the Fisheries Agency) is not only applied to find the median lethal concentration: LC50, but also the median effect concentration (EC50) is half concentration adversely affects the aquatic organism. As the result, it became to clear that Ecoryon never shown the acute toxicity for any organism, and the result of further detailed test, it also became to clear that the gelled material choked fish gills only if the concentration exceeds a certain value. However, if the influences can be practically controlled at allowable concentration or below, it can avoid the influence. As stated above, it can be implemented the construction works which has not the influence for the organism on the basis of the detailed test results.



Figure3

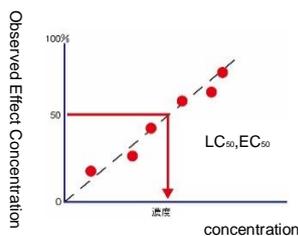


Figure2. The civil engineering works that is a concern to affect to the aquatic organism

In recent years, with the increasing social awareness, construction industry is demanded to commit proactively the influence reduction to the surrounding environment in the construction site as the corporate social responsibilities. Especially, the civil engineering works which related to the water area(sea, river, lake, etc.) have to comply with the standards and regulations in accordance with the laws. (see figure 1) Chemical Grouting Co.,LTD. possess the comprehensive technology which can assess the influence of construction drainage and various type of construction materials to the aquatic organism.

■Test Method

As the site is assumed to construct in the coast area, bioassay selected the 10 species out of the representative marine organism and plankton or seaweed which is a typical food of various organisms (Figure 4) that live in coast zone. As the influence for the fishes are assumed that the causes might be chemical factor such as toxicity of used material and physical factor which gelled material choke fish gills, the test water was made considering.

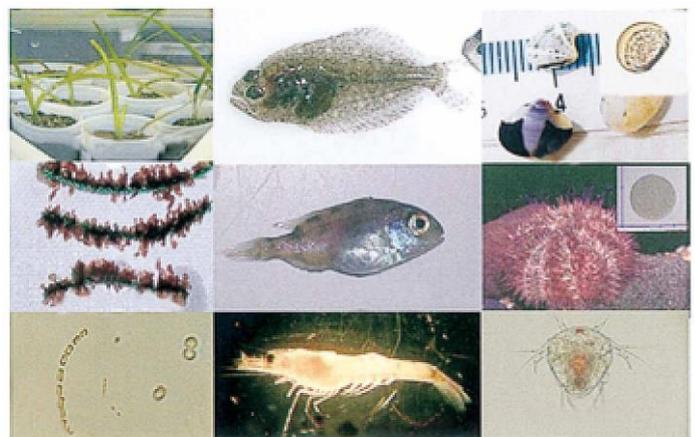


Figure 4