

**Statement of Patricio A. Bernal, Executive Secretary of the Intergovernmental
Oceanographic Commission and Assistant Director-General of UNESCO.**

His Serene Highness the Prince of Monaco, Albert the II.

Dr. Mohamed ElBaradei, Director General, International Atomic Energy Agency

Dr. Achim Steiner, Executive Director of the United Nations Environmental Programme

Dr. Werner Burkart, Deputy Director General of the International Atomic Energy Agency,

Dr. Elizabeth Dowsdeswell, President of Nuclear Waste Management Organization,

Canada

Dra. Ana Maria Cetto, Deputy Director General, International Atomic Energy Agency,

Distinguished Ambassadors and Heads of Delegations,

Ladies and Gentleman

I would like first to acknowledge and give a testimony of the long and fruitful cooperation that UNESCO and its Intergovernmental Oceanographic Commission has maintained with the International Atomic Energy Agency. This dates for more than 35 years, especially in the field of Marine Environmental protection and has been developed in particular around the Marine Environment Laboratory in the facilities of the Agency in Monaco.

Analytical techniques to be applied in the ocean are special. Sea water being such a complex solution, different substances dissolved in it can produce interference to standard analytical procedures and adaptation of methods are usually needed. Furthermore the lack of standard reference materials to calibrate the measurements is a real obstacle for the quality assurance of measurements.

Looking in the files I found a quote from the XVII Executive council of IOC, reporting on the successful preparation at the laboratory in Monaco of two new reference materials, for marine pollution studies, both based on Mussel tissue, and I quote

“GESREM-1 was certified for many trace metals and GESREM-2 for organic analytes, including the organo-chlorine pesticides and chlorobiphenyls that are the focus of the IOC-UNEP International Mussel Watch Project as well as for polycyclic aromatic hydrocarbons (PAH). The reference materials were distributed to laboratories participating in IOC and UNEP regional pollution programmes for intercalibration exercises”

There is no doubt that this pioneering work, bringing together three agencies of the UN-system, was essential to document the introduction and accumulation into the world oceans and its ecosystems of Persistent Organic Pollutants (POPs), including PCB's, polychlorinated biphenyls.

These chemical substances persist in the environment, bio-accumulate through the food web, and pose a risk of causing adverse effects to human health and the environment. Today the production and use of the most threatening among these compounds, the so-called “dirty dozen”, is now banned or strictly regulated under the Stockholm Convention of 2001.

But the most unique contribution of MEL and the work of the Agency is the application of radionuclide techniques for the assessment of rate processes in the ocean. Isotopes can be used as probes that allow precise and accurate quantification of fractionation rates among different chemical species and components of chemical systems. They also allow tracing the fate of components in the food web of ecosystems.

I would like to cite two examples.

First the use of radioactive labeled substances has improved the precision of the standard techniques used for assessing the concentration of toxins from red-tides, the massive growth of harmful algae. Radiative assessment of red-tide toxins are 5 to 6 order of magnitude more sensitive than the bio-assays and thanks to the Technical Cooperation Programme of the Agency they are increasingly being used around the world. IOC is proud to have contributed to this development and in support of our member states

we stand ready to continue cooperating with the Agency through the IOC Intergovernmental panel of Harmful Algal Blooms.

The second example is looking at future challenges. As a result of the massive burning of fossil fuels, the world's oceans are absorbing an unprecedented amount of carbon dioxide [CO₂] which is increasing its acidity and possibly threatening the long-term survival of many marine species.

The ocean is one of the Earth's largest natural reservoirs of carbon and each year absorbs approximately one third of the carbon dioxide emitted by human activities. Some 20-25 million tons of carbon dioxide [CO₂] are being added to the oceans each day. In absolute terms, the ocean has taken up approximately 120 billion metric tons of carbon generated by human activities since the year 1800. In recent years this amounts to a total annual input of around 7.3 billion Tons of carbon dioxide [CO₂.]

An international programme aimed at obtaining direct instrumental measurements during the last 10 years, has shown that the concentration of carbon dioxide [CO₂] in the upper layers of the ocean has increased, diminishing the pH and increasing the acidity of seawater.

This makes more difficult the synthesis of the carbonates [CaCO₃] building the skeletons of some planktonic organisms and corals, but it will also eventually modify the concentration of the different chemical compounds in seawater and in marine sediments. These changes are global and we need to know more about them. To ascertain the consequences of this massive shift of chemical equilibrium in seawater, it is necessary to conduct experimental research under realistic conditions. In their own facilities, MEL in Monaco is starting to do just that, a work that deserves the support of this whole community.

With justified pride, we use to say that MEL is the only marine scientific laboratory in the whole UN-system. For that we are extremely grateful to, His Serene Highness for the sustained support that has given to the UN and this fundamental work in protection of the marine environment and the stability of the life-support system of the

planet. We pledge here today once more the commitment of the Intergovernmental Oceanographic Commission of UNESCO in support of this important work.

Thank you.

Vienna, 19 of September 2006.