

The ISO – 8804 series: What kind of Scientific diving is concerned here ?

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What means Scientific diving ?

- Diving for science?
- Today this term is used for both *occupational* and *citizen* science activities
- Both of them are essential for the advancement of science
- They are COMPLEMENTARY.
- They have different public & administrative rules and policies (entry, medical, renewal)
- They have different training requirements and certifications

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Specific initial training standards are needed to dive for science in Europe, Occupational vs. Citizen Science Diving

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Today, collaboration between scientific research and civil society is growing significantly. The general public's curiosity drives it to engage with the scientific process and culture and in the search for solutions to complex issues (economic, social, health, environmental, cultural, educational, or ethical). Clarification is needed to differentiate between occupational scientific activity and citizen-based science. They do not require the same scientific and technical skills despite using similar equipment and their legal and administrative frameworks being totally different. The confusion created by the indiscriminate use of the same term "scientific diving" to refer to different training courses and activities compromises the quality of existing occupational standards and, ultimately, has a negative impact on the safety of the activity at work. A clear definition of Citizen Scientific Diving and Occupational Scientific Diving makes it possible to differentiate between the objectives and target groups of these two activities and their legal framework. There is a need to establish an accepted and shared standard in the occupational field and to ensure the mobility of scientists. A long process undertaken by a motivated scientific community (late 1980s-2000s) led to the establishment of European initial training standards for Occupational Scientific Diving through the ESDP-European Scientific Diving Panel (firstly under the aegis of the European Marine Board, now of the MARS-European marine stations network). The quality and general acceptance of these standards by a large part of the European scientific community have already adopted them in the occupational health and safety legislation of seven European countries (Belgium, Finland, France, Germany, Norway, Sweden, and the UK in 2023). Adopting them in other countries' health and safety legislation is still desirable. This will increase their recognition, acceptance and use for the benefit of scientific work. Building bridges between academic science and non-academic citizen science is possible and this is done by developing coherent projects that produce results that benefit both science and society. While distinguishing between the two, as an added value, this approach could better guide the recreational diving training sector in developing a new market.

KEYWORDS

academic science, citizen science, recreational diving, European scientific diving panel-ESDP, initial training competence, natural and cultural underwater heritage

Citizen science diving

- Citizen science diving is diving involving recreational divers (non-academic public) in the process of scientific research
- It is a participatory action taken by volunteers recreational divers

Occupational scientific diving

- Occupational Scientific Diving is diving that supports professional research and education.
- It is part of the scientist's professional activity

Citizen science diving (CSD)

- Open to all recreational divers from 14 years old
- Certification provided for life by the recreational diving sector
- Operations are conducted by diving clubs or individual recreational diving instructors
- More and more self-assessment of health for diving
- Training includes both basic science and limited underwater tried-and-tested techniques.

Occupational scientific diving (OSD)

- Open to the staff of a scientific institutions
- Certification is provided by national public authorities responsible for work and renewable every 5 years based on activities
- Operations are conducted inside a legal framework involving employer, employee, work methods statements and control all along
- Strict annual medical control
- Training includes underwater techniques and peer-to-peer training

ISO 8804 series (2024)

Three levels of certification

- *Scientific Diver 8804-1*

Diver competent in scientific methodology

Undertaking a scientific dive

- *Advanced Scientific Divers 8804-2*

Planning scientific dives, leading scientific dives under the oversight of a project leader 8804-3, coordinate the team with other teams, repetitive diving, challenging environmental conditions

- *Scientific Diving Project Leader 8804-3*



ESDP Standard (2000)

Two levels of occupational certifications

- *European Scientific Diver ESD*

Diver capable of acting as member of a scientific diving team

- *Advanced European Scientific Diver AESD*

Diver capable of organising a team a scientific diving (Occupational)

ISO 8804 series (2024)



- *Scientific Diving Project Leader 8804-3*
 - — the planning;
 - — the experimental design;
 - — the execution;
 - — the documenting and reporting of the findings of scientific diving projects.
- Scientific diver project leaders shall have the competency to handle complex scientific diving operations including:
 - — coordinating diving operations in remote locations;
 - — coordinating multiple diving teams;
 - — vessel operations for scientific dives.
- Scientific diver project leaders shall have the competency to evaluate the quality of sampling (e.g. accuracy, possible sources of bias, repeatability).

ESDP Standard (2000)

Two levels of occupational certifications

- *European Scientific Diver ESD*

Diver capable of acting as member of a scientific diving team

- *Advanced European Scientific Diver AESD*

Diver capable of organising a team a scientific diving (Occupational)

Introduction

This three-part standard is aimed primarily at vocational and academic training to become a scientific officer at three levels of competence and will set minimum requirements for the training of scientific officers at the three levels referred to in the scope of the three parts. It will be beneficial, both as a reference standard in training scientific officers and for scientific drug committees as a whole.

This document is considered the minimum competency standard for recognition as a scientific officer. It is intended to provide guidance regarding agreed upon minimum training requirements, thereby being helpful in cross-program or operational and regulatory through common understanding of the level set for the scientific officer.

Other organizations will have additional requirements for qualification of scientific officers. These supplementary requirements may include, but are not limited to, a greater number of training hours, additional training, advanced degree qualifications and requirements for maintenance of active drug files.

What are the limits to equivalencies between the two training standards

- Entry Scientific and Technical levels in diving are not compatible.
- Diving depth requirements are not compatible.
- Training programs are not compatible.
- The two training standards (OSD and CSD-oriented) target different people to achieve different goals, but they use **similar terms and vocabulary**.
- ISO 8804 series addresses better the training needed for Citizen Science Diver, including a large part of basic science
- It concerns a large population.
- ISO 8804 series is not equivalent to ESD-AESD

What are the links between CSD and OSD

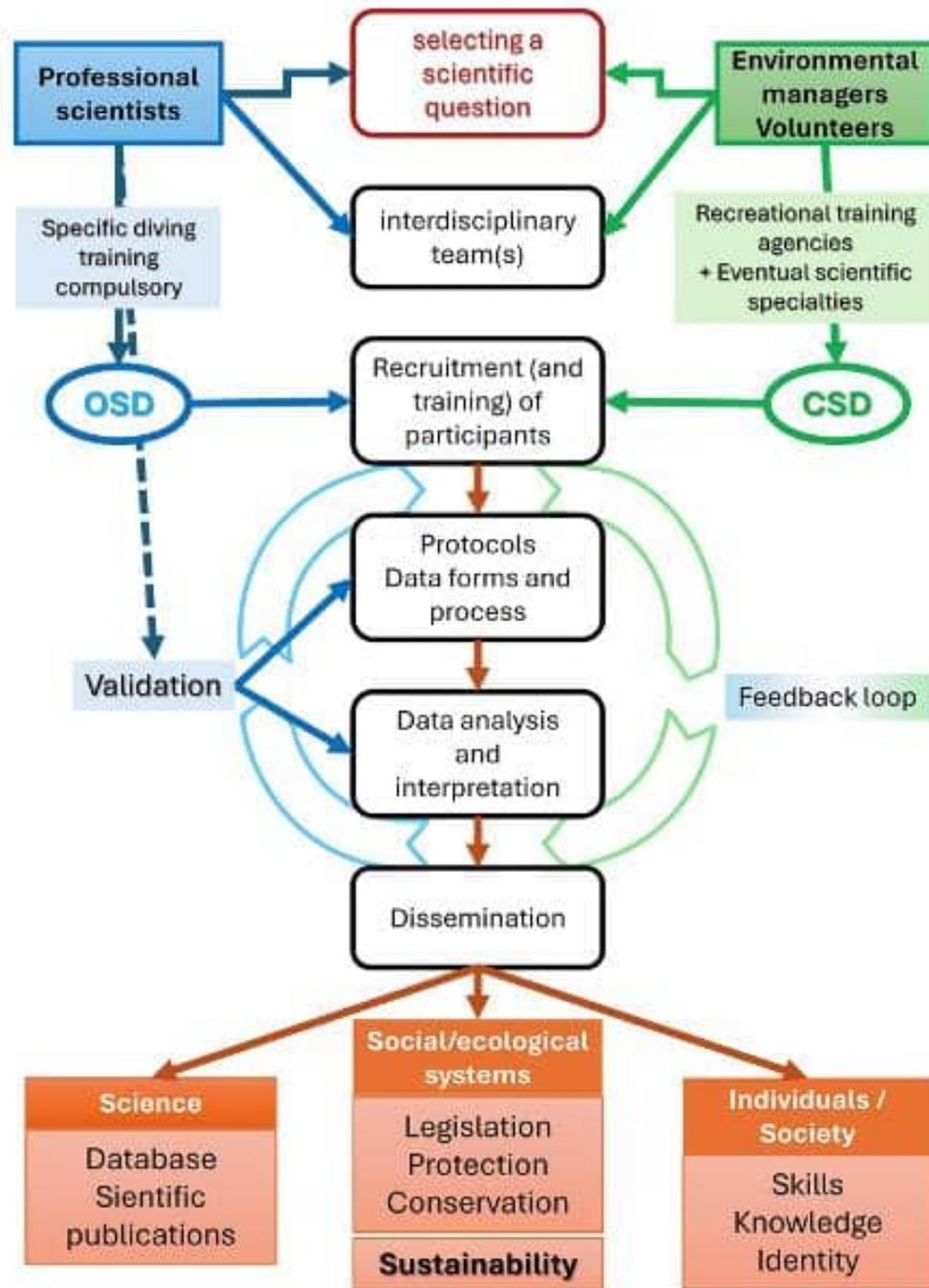
- The collaboration of volunteer divers is increasingly essential, given the growing need for data over larger areas
- The role of the new ISO standard is essential for the training of the CSD
- Initiative taken at a large scale that enhances the awareness of the public for the marine environment

Scientific diving only exists if it is efficient:

→ project centered + objectives defined + divers' roles distributed according to their skills **vs.** the needs of the project

→ **a unique goal:**

generation of **data usable by science.**



Conclusions

- Occupational scientific diving is different from Citizen science diving.
- Both use the same terms and vocabulary.
- This results in a blurred situation difficult to understand for the public and for the legislator (labour law)
- The ISO 8804 series standard will not help clarify the situation.
- No direct equivalence is possible between ESDP and ISO-8804 standards.

Questions ?

