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The European Registered Toxicologist (ERT): Current status and prospects for advancement

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Conflict of Interest

All authors have nothing to disclose.

Keywords

European Registered Toxicologist; EUROTOX

Abbreviations

CEN = European Committee for Standardization; CPD = Continuing professional development; EAPCCT = European Association of Poison Control Centres and Clinical Toxicologists; ESTIV = European Society for Toxicology in Vitro; ERT = European Registered Toxicologist; EUROTOX = Federation of European Toxicologists and European Societies of Toxicology.

Abstract

Following its inception in 1994, the certification of European Registered Toxicologists (ERT) by EUROTOX has been recognized as ensuring professional competence as well as scientific integrity and credibility. Criteria and procedures for registration are contained in the ERT "Guidelines for Registration 2012". The register of ERT currently has over 1,900 members.

In order to continue the harmonisation of requirements and processes between national registering bodies as a prerequisite for official recognition of the ERT title as a standard, and to take account of recent developments in toxicology, an update of the ERT Guidelines has been prepared in a series of workshops by the EUROTOX subcommittees for education and registration, in consultation with representatives of national toxicology societies and registers. The update includes details of topics and learning outcomes for theoretical training, and how these can be assessed. The importance of continuing professional development as the cornerstone of re-registration is emphasised.

To help with the process of harmonisation, it is necessary to collate and share best practices of registration conditions and procedures across Europe. Importantly, this information can also be used to audit compliance with the EUROTOX standards. As recognition of professionals in toxicology, including specialist qualifications, is becoming more important than ever, we believe that this can best be achieved based on the steps for harmonisation outlined here together with the proposed new Guidelines.

Introduction

Toxicology is a broad scientific discipline practised by scientists from different educational backgrounds and professions. As early as the 1980s an increasing need for professional recognition of qualified toxicologists was identified. As a result several toxicological societies in Europe in particular Germany, the Netherlands and the UK, started to develop national registers to recognize qualified toxicologists. For this purpose senior toxicologists were nominated by their societies to form national boards for identification of individuals qualified for registration. In the early 1990s experts from several European countries, under the umbrella of the Federation of European Toxicologists and European Societies of Toxicology (EUROTOX), jointly defined criteria for registration of qualified toxicologists. These criteria were comparable to those in use in the USA and elsewhere. The resulting common requirements were adopted by a number of European toxicology societies allowing for mutual recognition albeit with some national specificities. Joint European registration according to the "EUROTOX model" was started in 1994 by the three founding registers (UK, Germany, Netherlands). Requirements for EUROTOX registration were first published in preliminary form in 1995 as "Expectations of a EUROTOX REGISTERED TOXICOLOGIST (ERT)" (Fowler et al. 1995, Savolainen 1998). The title was later re-named "European Registered Toxicologist". The common requirements of the EUROTOX model of registration defined five basic conditions for registration:

- An academic degree in a related subject
- Theoretical knowledge of major areas of toxicology
- A minimum of 5 years of practical experience
- Current professional engagement in toxicology
- Renewal at 5 years intervals

Furthermore, the "Expectations" contained short summaries of the theoretical knowledge and practical experience required, as well as some administrative and procedural guidance for registration and re-registration. In order to provide the expected theoretical knowledge several toxicology societies developed courses, most of them jointly with academic institutions.

For practical reasons, and to comply with the federal structure of EUROTOX, the model of registration was designed as a two-step procedure. Firstly, at the national level independent boards of expert members of each national toxicological society evaluate applications of candidates. Subsequently, the EUROTOX Secretariat would certify successful individuals as

European Registered Toxicologist (ERT) without further evaluation. Over the years most European societies of toxicology which are members of EUROTOX joined the registration scheme which now includes 21 national registries. A review in 2007 highlighted the critical importance of education and training (Fig. 1) and recognised that "significant work remains to further align the national registries and reviewing panels to identify as much as possible the requirements and characteristics for the accreditation of toxicologists in Europe" (Fowler and Galli, 2007).

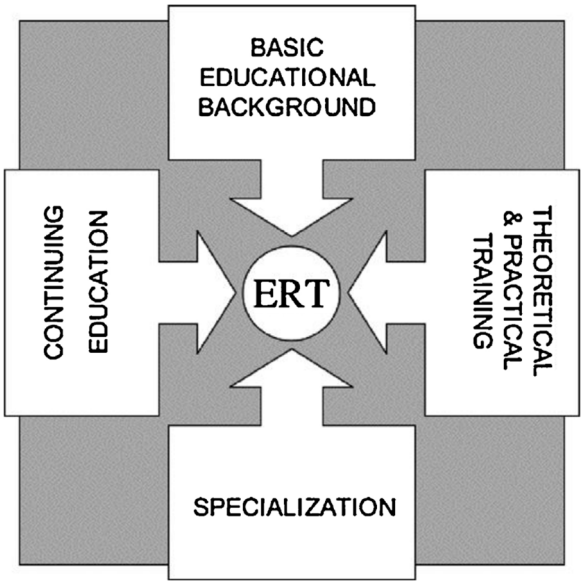

Fig. 1 Summary of ERT requirements (reproduced with permission from Fowler and Galli, 2007)

Development of the ERT guidelines 2012

In the years 2010 – 2012, the EUROTOX sub-committees for education and registration jointly developed an update of the "Expectations of a Registered Toxicologist" in order to further increase harmonisation and conformity of criteria and procedures among the national registers. The update took into account the evolution of toxicology since the 1990s, such as progress of science, increasing needs for specialisation, shifts of focus in the field e.g. in favour of risk assessment. Criteria for registration and administrative procedures for registration and re-registration were evaluated and revised where appropriate. Following extensive review and comments by the member societies, the "ERT Guidelines for Registration" were ratified by EUROTOX initially in 2011 and, after further adjustments, were finally adopted and published in 2012 (http://www.eurotox.com/ert/). They provided a

template covering the entire process of education, practical experience, documentation, and registration.

Subsequent to the publication of the ERT guidelines in 2012, the sub-committees for education and registration organised five workshops to publicise the updated concepts and regulations in the ERT guidelines in discussions with national registries. The aim was to establish the requirements for content and learning outcomes of educational offers, and to consider the needs for future development. This position paper is the result of the work accomplished in the last three workshops and in particular the workshop held in Paris in May 2016 in which the authors of this paper participated. The two sub-committees also prepared a **mission statement for the registration and educational activities of EUROTOX** which was adopted by the EUROTOX Business Council Meeting in Porto, Portugal, in September 2015 (see text box).

Mission statement for the registration and educational activities of EUROTOX*

Mission

To provide Europe with

- *well-trained toxicologists*
- *a system to recognise qualified toxicologists (ERT) to ensure the safety of society in general*

Aims

- *facilitate and support the education process*
- *harmonise and set training standards leading to ERT*
- *promote ERT and further specialisation in toxicology*
- *contribute to international efforts for worldwide recognition of qualified toxicologists*

In order to achieve these aims the sub-committees seek the cooperation of national societies and international organisations.

* Prepared by the sub-committees for education and for registration and adopted by the EUROTOX Business Council Meeting in Porto, Portugal, in September 2015

Current standing of the ERT

The ERT system has proven successful over the years. Currently, the 21 European registers have more than 1900 registered members who are recognised as ERT by EUROTOX. This development reflects the advantages perceived by European toxicologists of being an ERT. For example, the proprietary designation “European Registered Toxicologist” (indicated by

the post-nominal letters ERT) distinguishes a registered toxicologist from other, often self-proclaimed “experts“ who may be called upon in particular by the media to comment on toxicological issues of public concern. The ERT designation provides assurance of professional competence, scientific integrity and credibility. It certifies common high standards and, by acceptance in all registering countries, facilitates mobility of members. Furthermore, it is appreciated by employers in Europe and worldwide, thus providing better job opportunities.

Future harmonisation of national registration processes

Several aspects of the 2012 ERT guidelines were identified as needing improvement and updating. Some of these have now been accomplished, for others possible solutions have been discussed and, at least in part, agreed. In particular, the list of educational topics provided in the theoretical part (section B of ERT guidelines) has been revised and the definitions of aim, content and learning outcomes were developed in the ERT workshops. These will be published as an annex to the revised guidelines.

The guiding principle in considering needs for education and registration continues to be **harmonisation on a high level** of the respective activities of European national registers and EUROTOX. This is particularly important with regard to the different routes for registration ((a) education and training and (b) experience and practical “on the job” training). A requirement for all candidates for registration to demonstrate the required theoretical knowledge (e.g. by formal assessment) is considered as an essential part of further harmonisation. Such an assessment could be offered by EUROTOX as a service for candidates who have not gone through a formalised process of attending educational courses.

Some providers of educational courses for the purpose of a) ERT registration and b) continuing professional development (CPD) have indicated that they would value a process for recognition of courses by EUROTOX. This has now been defined and will be added as an annex to the revised guidelines. In an effort to strengthen international cooperation on education of ERT candidates and CPD of ERTs, exchange of information on the various educational activities in European countries would be a step forward. For example, it is essential that the list of available courses presented on the EUROTOX website is updated on a regular basis. Likewise, exchange of lecturers and of students should increase consistency

between the various courses. The rapid development of internet-based educational tools such as e-learning platforms and webinars also provides additional opportunities to share educational offers e.g. by arranging joint course programmes.

In the field of education and practical training, current cooperation with universities who are offering master programmes in toxicology should be extended to facilitate their use for ERT requirements. Furthermore, doctoral programmes based on practical work and training in fields relevant to toxicology are currently available in some universities, and should be offered more widely. Also, participation of universities in formal assessments (examinations) of candidates who have not attended educational courses, in accordance with ERT guidelines, may be a possibility worth considering. Participation of universities in the educational programmes for toxicologists seeking registration would increase the prospect of worldwide recognition of the ERT qualification. Additionally, it would be advantageous for both EUROTOX and academia, and may help to reverse the current reduction of academic positions in toxicology (Gundert-Remy et al., 2015, Wallace et al., 2016).

Sharing of best practices concerning education and registration procedures among national registers requires detailed information to be collated from every registering national society. EUROTOX will then use this information to identify best practice across Europe and offer this to all e.g. via further revisions in the ERT guidelines. Importantly, the information can also be used in an auditing process to ensure compliance with the standards established by EUROTOX.

Essentially, this requires regular exchange of information between national course directors and representatives of registration boards with the EUROTOX sub-committees for education and registration. In order to manage common tasks including statistics, administration, record keeping of registration and re-registration activities, the central ERT functions and services of EUROTOX should be coordinated by a single body working with the sub-committee for registration but also including a number of elected national representatives (e.g. registry chairs, course directors).

Further development and harmonisation are also required with regard to the national processes for re-registration. The demonstration of CPD is a cornerstone of the re-registration process, and some national registers have, from their inception, required records of the

personal development activities of registered toxicologists to support periodic re-registration. The recent creation of online-based systems in some national registers and the use of credit points (e.g. ECTS = European Credit Transfer System)[1] have facilitated the transparent recording of CPD activities. In the first instance, EUROTOX will be able to share best practice among the national registers but future possibilities include establishing a central register available to all registered toxicologists for documenting their CPD.

Recognition of the ERT qualification in Europe and worldwide

Recognition of professionals in scientific disciplines such as toxicology is becoming more important than ever in our increasingly globalised environment. The needs of international employers in industry, government offices, European agencies, scientific panels, contract research organisations, international regulatory bodies and academia require demonstration of proficiency and comparable educational standards (Bass and Vamvakas, 2000). Responsibility for quality of reports, risks assessments and scientifically-based regulatory decisions often has to be documented by the personal signature of a qualified toxicologist. Therefore, the goal of future development of the ERT system has to be the formal recognition of its value by appropriate European bodies.

Although certification as an ERT is widely appreciated by national and international agencies and authorities and by companies, the title is not legally recognized so far. Such official recognition has been identified as an urgent goal by EUROTOX. The following concept has evolved from the joint workshops of the education and registration sub-committees as a possible starting point for achieving this goal in the future.

The ERT guidelines have attained a degree of standardisation and precision which will be further enhanced by current work and the activities described above. On this basis it seems reasonable to start a process for recognition of the ERT training as a European Standard e.g. by the European Committee for Standardization (CEN). This perspective is supported by the recent approval of the European Standard of “Health risk assessment of chemicals - Requirements for the provision of training - Complementary element” (CEN, 2015; Galli and Altenpohl, 2014). Standardisation of the ERT system could be either for the training program

[1] ECTS = European Credit Transfer System. ECTS credit designates an amount of workload. Typically, one year corresponds to 60 ECTS-credits. A 3-year Bachelor program has therefore usually 180 ECTS-credits; a 2-year Master program usually 120 ECTS-credits.

or the required knowledge/skills, or for the process of registration. This would not necessarily change the ERT Guidelines but would serve to maintain and increase harmonisation. Inclusion of the ERT in an external system would help to elevate the branding and international recognition and promotion of ERT. National societies and EUROTOX also need to consider ways of better fostering the ERT concept in order to achieve increased recognition in European countries and supranational bodies.

Specialisation of registered toxicologists

Registered toxicologists frequently undertake specialisation over and above ERT requirements. This specialisation of experts in certain areas or fields of toxicology needs to be recognised. Some possible examples of specialist areas are listed in the educational topics in the Guidelines. For official use, all fields accepted for specialisation should be entered into a list following approval by EUROTOX which also defines relevant criteria for each field. Proposals for recognition of defined fields of specialisation may come from groups interested in having their expertise recognised, such as specialist organisations who are members of EUROTOX, e.g. the European Association of Poison Control Centres and Clinical Toxicologists (EAPCCT), or the European Society for Toxicology in Vitro (ESTIV). For defining criteria and evaluation of candidates, specialists from ministries, universities and state authorities can be co-opted into their national registration committees. Depending on the specialist field, communication and liaison with scientific societies or bodies outside EUROTOX may also be required, as may external financial support, e.g. via EU tender projects. Clearly, the subject of officially registering fields of specialization of ERT will be important in the future, but currently priority needs to be given to the structural work on ERT and the formal recognition described above.

Conclusions

The EUROTOX system for recognizing the professional qualifications and experience of toxicologists has proven a valuable asset for European toxicologists since its inception more than 20 years ago. The development of detailed guidelines for content and processes of registration and re-registration has helped to improve harmonisation among national registration systems. This process will continue with the immediate focus being on

- common assessment procedures,

- enhanced collaboration in education,
- mutual recognition of educational offers,
- sharing of best practice,
- auditing of registration and re-registration procedures.

The explicit goal is to achieve formal recognition of the ERT as a professional qualification by competent bodies in Europe and worldwide. This may in the future include recognition of specialist qualifications for toxicologists.

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