

Thematic Meeting

The Pros and Cons of a Professional Ethos ('Oath') for Chemists

Date: February 25th 2022, 15:00 CET

Location: online

Participants: 20

Style: Open discussion

Summary:

1. Hartmut Frank talks about his proposal to align the Hippocratic oath for chemists along the lines of the Geneva declaration of the world medical association.
2. Francesco de Angelis talks about his text (shown on screen and shared with all before the meeting). It has occasionally been employed in graduation ceremonies at Italian universities at which *'it created a very deep atmosphere'*. He pleads for the name *'Hippocratic Oath'* because of its prominence.
3. Ahmet Üzümcü: The oath cannot stand alone. It needs a framing by explaining its purpose and context.
4. Stefan Fränzle remarks that the term 'race' should not appear in such a text, and that in his opinion the oath should carry a name different from the medical profession's oath.
5. Anca Silvestru reaffirms the importance of a broadly contexted oath because chemistry is affecting many (all) areas of human activity.
6. Luigi Campanella states that research ethics education as in the 'Good Chemistry' course is more important than an oath, sparking a reply from Hartmut that the multitude of efforts is what will have the highest chance of success.
7. Jan Mehlich reminds of the arguments against an oath (as that of Jean-Marie Lehn) such as lack of potential to induce a change of attitude. Yet, it is exactly the discussion of the (non-)sense of an oath and what it must look like that makes the students think about it.
8. Roald Hoffmann agrees and explains that the oath is effective when placed at special moments in a chemist's career such as graduations or appointments. Roald proposed to learn from priests, who use rituals at moments of passage (e.g. birth, marriage, death). An oath on its own can be of very limited value: see the behavior of medical doctors in world war 2, who have all spoken their Hippocratic oath as well.
9. Hans Steisslinger reiterates that the oath can act as a reminder and decision aid when facing career- and personal path related choices.
10. Erhard Meyer-Galow shares his experience that we obviously wish to change others to be 'on track' with the oath, which will likely fail. We better be moderate without expectations. Ethical professional conduct is a matter of leadership and acting as a role model. The crucial factor,

here, is consciousness, with reference to C.G. Jung. Rather than about ethics, an effective chemists' oath would thus be about inner growth.

11. Alistair Hay supports this view and identifies the important task to make sure that an oath can, indeed, induce a change in attitude and behaviour.
12. Hartmut Frank suggests that all our individual statements/opinions regarding the oath could be collected and then published. Francesco de Angelis, Stefan Fränzle, Hartmut Frank and Hans Steisslinger volunteer to work out questions, which all members of the working party would be able to answer individually. We all agree that the oath cannot just stand alone. It needs to be paired with a curriculum, as shown in the Italian Chemical Society. We also nurture the idea to run a series of webcasts, where we interview prominent colleagues about their opinions on what ethical behaviour in the life of a chemist means to them.
13. Roald brings all of us down to very basic applications of the spirit of an oath regarding end-of-life questions: He is trying to sign an agreement with the American Chemical Society (ACS) not to take part in state mandated executions. The ACS has met this initiative with great resistance. Other related topics are abortion and assisted end of life.
14. EUCHEMS conference Lisbon 2022: Mario Berberan e Santos informs us that the WP can still make a contribution, if and when we line up with another group, e.g. chemistry and society.

Attachments (documents communicated before the meeting):

- The Chemist's Vow, drafted by Hartmut Frank
- Charter of Ethical Principles for the Chemical Sciences (the final document of a working group formed by Elio Santacesaria (University of Naples - coordinator), Ferruccio Trifirò (University of Bologna and SAB member of OPCW), and by Francesco de Angelis (at that time president of the Società Chimica Italiana - SCI), list of respective publications

The Chemist's vow (by Hartmut Frank)

As a member of the community of all chemists, I solemnly pledge to devote my life and work to the service of humanity.

I will uphold the highest respect for all human and earthly life. (?)

I will not allow considerations of age, illness or disability, creed, ethnic origin, gender, nationality, political affiliation, race, economic interest, sexual orientation, social status or any other factor to interfere with my professional duties to preserve and advance the human life in peace, liberty, and justice, and of all living beings of the earth.

I will practice my profession to the best of my ability, with dignity and in accordance with good professional practice.

I will promote the honor and noble traditions of my profession.

I will show my teachers, my colleagues and my students the respect and gratitude they deserve.

I will not use my knowledge to violate human rights and civil liberties, even under threat.

I solemnly pledge this, of my own free will and on my honor.

Das Gelöbnis des Chemikers

Als Mitglied der Gemeinschaft aller Chemiker gelobe ich feierlich, mein Leben *und berufliches Wirken* in den Dienst der Menschlichkeit zu stellen.

Ich werde den höchsten Respekt vor menschlichem und allem irdischen Leben wahren. (?)

Ich werde den höchsten Respekt vor menschlichem Leben wahren. (?)

Ich werde nicht zulassen, dass Erwägungen von Alter, Krankheit oder Behinderung, Glaube, ethnische Herkunft, Geschlecht, Staatsangehörigkeit, politische Zugehörigkeit, Rasse, ökonomische Interessen, sexuelle Orientierung, soziale Stellung oder jegliche andere Faktoren zwischen meine berufliche Pflichten zum Erhalt und Fördern des menschlichen Lebens in Friede, Freiheit, und Gerechtigkeit, und aller lebender Wesen der Erde treten.

Ich werde meinen Beruf nach bestem Wissen und Gewissen, mit Würde und im Einklang mit guter professioneller Praxis ausüben.

Ich werde die Ehre und die edlen Traditionen meines Berufes fördern.

Ich werde meinen Lehrerinnen und Lehrern, meinen Kolleginnen und Kollegen und meinen Schülerinnen und Schülern die ihnen gebührende Achtung und Dankbarkeit erweisen.

Ich werde, selbst unter Bedrohung, mein Wissen nicht zur Verletzung von Menschenrechten und bürgerlichen Freiheiten anwenden.

Ich gelobe dies feierlich, aus freien Stücken und bei meiner Ehre.

CHARTER OF ETHICAL PRINCIPLES FOR THE CHEMICAL SCIENCES

PREAMBLE

Whereas, during the course of the last century, the Chemical Sciences have contributed greatly to the improvement of human health, to the strengthening of hopes for a better life, and to the enhancement of general well-being; and in acknowledgement of the fact that improper use of these sciences may cause harm not only to human life but also to other living species and to the environment, the need becomes obvious for a Social Pact constructed on the basis of ethical principles in which Experts of Chemical Science commit themselves to the protection of society and of the world from improper uses of the Chemistry through their adherence to a General Charter of Ethical Principles for the Chemical Sciences.

The General Charter of Ethical Principles for the Chemical Sciences concerns every aspect of the study, research, development, and application of Chemistry, in all of its interactions with the animate and inanimate world. Because the object of the Chemical Sciences is the World, encompassing the myriad meanings of the word, the aims of the Chemical Sciences can be only two:

Protect the earth, and the biosphere and its ecosystems.

Improve the quality of life, reducing to a minimum or eliminating entirely potential negative effects on the environment

Ethical Principles

The definition of Ethical Principles for the experimental Sciences such as Chemistry is by no means self-evident. The question of ethics is tied, above all, to the aims of chemistry—that is, to the final objectives to which work in the field is directed.

It is essential to train researchers and technicians to identify the correct path in a conceptual duality between what is proper and what is improper in chemistry in such a way that, at the point at which their work commences, they first ask themselves these questions:

does it improve the quality of life?

does it damage the earth and its ecosystems?

Conceptual Dualism

Each individual's general ethical principles belong to his or her upbringing and to the traditions of the country in which he or she lives. Culture, Morality, Ideology, and Religion exert considerable influence over individual behavior, and differences among nations are significant. A General Charter of Ethical Principles for the Chemical Sciences must take such differences into account and put forward Principles that can be universally shared.

Propositions

Ethical Principles for the Chemical Sciences, in consequence, must emerge from propositions that are specifically practicable in the contexts of experimental and manufacturing activities:

- Science is universal and progress in science must be shared universally,
- Scientific research must be “neutral” and aimed at an improved understanding of naturally occurring phenomena,
- Ethical scientific conduct is universal and is independent of cultural context,
- Fundamental ethical problems emerge with regard to the purposes and/or the application of the results of scientific research,
- **Work carried out to create chemical weapons is not ethically acceptable,**
- Research fostered by Industry or other Organizations for profit-making purposes must assess possible contrapositions for human health and the environment.
- Industrial activities must be undertaken only in the certainty that they will not cause damage to people or to the environment, and must anticipate as well the potential consequences of human error or negligence.

Connections to awareness of the Chemical Sciences and to Professional Education:

- It is both appropriate and positive to increase the public's awareness of the Chemical Sciences,
- It is appropriate to promulgate these Ethical Principles for the Chemical Sciences as a fundamental aspect of professional preparation for workers in the field in order to ensure the proper application of Chemistry,

- A clear ethical basis during professional preparation decreases the risks that Chemistry will be used improperly.

(from the 2nd Pugwash Workshop on Science, Ethics and Society, Ajaccio, Corsica, 10-12 September 2004)

Areas of greatest Risk for improper use of Chemistry.

- the production of chemical weapons, “dual chemistry,” (the production of chemical intermediates),
- herbicides, pesticides, and insecticides whose effects on the environment remain unchecked, even following excessive use
- urban, industrial, and hospital wastes,
- use of harmful and toxic substances in manufacturing cycles
- the deliberate or accidental release of harmful substances into the environment
- new, insufficiently tested chemical products (European Project REACH – Regulation, Evaluation, Authorization of Chemicals)

Defense

- Review the basic vocational training of workers in the Chemical Sciences with the introduction of Ethical Principles and of analytic techniques for the identification of toxic substances and of their effects into courses of professional training.
- Develop the European Project REACH on a national level.
- Increase control over manufacturing and of the disposal of waste products from Industry, Hospitals, landfills, recycling centers, and public rubbish dumps.
- Exert greater control over Agricultural use of chemical products.
- Distribute information regarding the proper use of Chemistry as widely as possible among members of the public.

(from the Chemical Education and Outreach Project of the OPCW/IUPAC [Organization for the Prohibition of Chemical Weapons/International Union of Pure & Applied Chemistry]).

CHARTER OF ETHICAL PRINCIPLES FOR THE CHEMICAL SCIENCES

Whereas the Ethical Principles for the Chemical Sciences may be applied in three different functional areas of Chemistry, including:

- Experimental research activities—with particular regard to the synthesis of new products,
- The activities of workers in various industrial and manufacturing sectors,
- The activities of Corporations carried out through their Managers,

the Charter of Ethical Principles for the Chemical Sciences concerns the general ethical objectives that should be transmitted to chemical researchers and technicians during the course of their professional preparation, and sets out the moral responsibilities of Managers and of Corporations.

THE CHARTER OF PRINCIPLES DECLARES:

The pursuit, as an overriding objective, of the improvement of the quality of life, eliminating all potential contrapositions or objections to the achievement of this goal, and of the safeguarding of the ecosystem from permanent pollution and environmental degradation and from the depletion of renewable resources, is held to be fundamental above all else to the professional activities of the Experts of Chemical Science.

Of paramount importance is the principle of prohibiting and eliminating chemical weapons and of vigilance to ensure that chemical weapons are neither produced nor used in any country, in conformance with the 1993 Paris Chemical Weapons Convention (Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction).

With regard to Research into new substances, it is essential that such substances and their intermediate products always be tested for potential biological and chemical hazards and for environmental toxicity before they are placed into production and made available for common use. Such precautions, otherwise required by European legislation, must also be extended to products and substances already known in the event they should be returned to use.

THE CULTURAL COMMITMENT OF THE EXPERTS OF CHEMISTRY AND CHEMICAL TECHNOLOGY.

Ensuring that the Principles and the objectives described herein become an integral part of his professional cultural-scientific preparation and of his professional activities will be a commitment that endures throughout the entire career of the chemical sciences professional.

THE SOLEMN PROMISE OF THE CHEMIST AND THE CHEMICAL ENGINEER IN RECEIVING A DEGREE OR DIPLOMA

At the completion of a course of study, the student should sign the following commitment:

I SOLEMNLY PROMISE:

TO APPLY THE ETHICAL OBJECTIVES OF THE CHEMICAL SCIENCES, WHICH ENTAIL:

- OPPOSITION TO THE IMPROPER USE OF CHEMISTRY,
- SAFEGUARDING OF THE ENVIRONMENT AND ITS ECOSYSTEMS,
- IMPROVING THE QUALITY OF LIFE WITHOUT HARMING THE WORLD AROUND US,
- DISSEMINATION OF AWARENESS OF THE ADVANTAGES AND BENEFITS OF THE CHEMICAL SCIENCES IN PUBLIC OPINION.

LA CARTA DEI PRINCIPI ETICI DELLE SCIENZE CHIMICHE
CHARTER OF ETHICAL PRINCIPLES FOR THE CHEMICAL SCIENCES

Publication

SCI web-site, **2007** (att.: 2022 – old site, no more active)

www.soc.chim.it/it/documenti/carta_dei_principi

La Chimica e l'Industria (magazine of the Italian Chemical Society), **2007**, No. 5, 150-151

https://www.soc.chim.it/it/riviste/chimica_industria/rivista/2007/5

Citations

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IUPAC *Draft Elements for Code of Conduct*, February **2011** (see annex II)

https://iupac.org/wp-content/uploads/2020/04/2007-022-2-020_IUPAC_Code.pdf

EU Commission_ *SATORI project* **2015**, page 25, references 158 -> 162

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