

## Strengthening chemical safety and security in the area chemical activities in Ukraine

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Dear Mr. Chairman,  
Ladies and Gentlemen!

The problems of chemical security and safety, on my vision, are necessary to divide on three large directions: chemicals as weapons, chemical production and industrial usage and, so called, chemicals in everyday life. I'd like to present situation in Ukraine from these general approach.

Chemical security and chemical safety of Ukraine are based on national regulation and international conventions. Ukraine is a state-party of various Conventions which concern chemicals or toxic materials, such as Chemical Weapons Convention, Basel and Rotterdam Conventions, Montreal protocol etc. The national legislation contains numerous acts and rules to regulate production and usage of chemicals, from industrial safety to pesticide and fertilizer registration and usage. We collaborate with EU and international organizations in order to harmonize our legislation about chemical management.

The first area – “chemical as weapons”. Ukraine is a member of OPCW and ratified Chemical Weapon Convention. Fortunately, we have no chemical weapons on our territory. For many years, we actively participated in activity of OPCW and other international organizations in order to eliminate threatening weapons of mass destruction. Our state was a place of military and civil defense exercises, teaching and practical courses for specialist from foreign countries, etc.

Control service on state borders enables in some to detect and to prevent a transfer of toxic chemicals, explosives, narcotics and precursors by standard procedures and technique. Nevertheless, the system needs in improvements, on my opinion. We received some new instruments from US and other international partners. The next step, on my vision, we need to create the national reference laboratory in order to be ready to solve some complicated tasks, if it will be necessary. On the other hand, it's impossible to exclude some cases of illegal use of “home-made” toxic materials or explosives that it was happened this year in Dnepropetrovsk. Obviously, we have to improve control system on a general management with some chemical components and precursors in order to prevent their illegal use by criminal groups.

Ukraine ratified of UN Single Convention on Narcotic Drugs, 1961, and other Conventions, which control all aspects of narcotic and psychotropic substances and

precursors. By my opinion, Ukrainian legislation and regulation in this area is stronger than in EU. For example, my Institute must have the special license to work with hydrochloric and sulfuric acids, acetone and some other common reagents, which do not license by EU Directive. Special Nation service was organized and is working on narcotic control. Of course, this area of activity is very important form my country, especially in view of growing immigration from Asia.

Chemical industry sector is an important part of Ukrainian economy. It includes about 50 big enterprises plus more than 6500 medium-size and smaller companies. They employ near 155 thousand people and produce more than 6000 names of chemical products. Foreign trade turnover of Ukrainian chemical sector has reached 14.4 billion US dollars in 2011. Export of chemicals from Ukraine last year was near 10% of whole countries export and share of the chemical industry in GDP is about 6%.

For last 20 years, chemical industry and production of chemicals in Ukraine demonstrated unstable processes in many sectors with drop in production as a whole. Production of fine chemicals, dyes, pesticides, additives etc, reduced very fasts. Primary chemicals, first – inorganic chemicals and fertilizers, are dominated in production and occupied in export structure. Import of chemicals for the last 3 years is near equal to national production. The new investments and modernization of technology proceed enough slowly.

Industrial safety on plants is regulated by technological documentation, licensing and additional safety regulatory documents. For instance, these are national regulations on inorganic chemical production, basic chemicals or licensing on toxic chemicals production and trade. Other example, we have the special low “About pesticides and agrochemicals”. The toxic and hazardous chemicals occupy the main place in national regulation on chemical production, transportation and trade. Unfortunately, some accidents with chemical occurred in Ukraine, mainly on transportation by railway or cars. These cases demonstrate a necessity of corresponding preparedness to act quickly and correctly.

Country's largest chemical manufacturers representing 70% of the national chemical industry have joined Responsible Care initiative and UCU making further efforts to attract smaller-sized and medium companies. We are grateful to Cefic and ICCA for the support Responsible Care initiative in Ukraine. Major Ukrainian companies have realized the registration of their products (72 names) in EC from 2010 by REACH reoomendations. We have plans to finish to register 110 preliminary registered chemicals.

Ukrainian Chemists Union as a National association of chemical industry supports the objectives of Cefic and shares the values of our European partners. We also support the efforts aimed at implementation of common approaches to legislation and regulations on chemicals production and their safe use, tariff regulations and trade practices. UCU welcomes the introduction of international standards of safe management of chemical products, voluntary initiatives and principles of corporate social responsibility.

In 2008 Ukrainian Cabinet of Ministries accepted the Conception on "Promotion of Chemical security and safety". The Conception provides for improvement of national legislation with international and European standards and practice, strengthening safety, classification of chemicals on dangerous properties on EU Directives. The document proposes to create expert groups, special advisory centers, risk management system etc. The expert system of decision makers is planned to create in order to be ready to act in emergencies or accidents. Monitoring, toxicological investigations, preparation of specialists and education programs jointly with other proposed direction of activity should be a general basis in improvement and development of chemical safety. This conception is a right and comprehensive document. Only one problem exists – to find money on realization...

The conception provides for active participating in the international programs to prevent chemical pollution, environment protection, collaboration with international bodies and public organizations on bilateral and multilateral levels, cooperation in the field of chemical safety and actions in prevention of chemical accidents.

Many provisions of the Conception are directed on safe using of chemicals in other sectors of industry and social life of a society. From the past, chemical processes are the fundamental technological principle to convert raw material into materials needed for human activity and life. No doubt, chemical processes and chemicals will be used by society in everyday practice in future from purification of water to production of very sophisticated materials for high-tech and pharmaceuticals. If we look about more precisely, we can find that chemical processes dominate in industrial technology, e.g. energy production from carbon fuels or metallurgical processes are also chemical processes – oxidation or reduction, correspondingly. Food processing is also based on chemical or biochemical conversion carbohydrates, proteins, water and other components into final desired products and is used numerous chemicals as food additives. Some times a general knowledge of hazardous properties of chemicals

among staff and workers is far from necessary. To overcome the situation it is desirable to organize continuous education of a personal on chemical safety and handling.

On the other hand we have to improve “chemical culture” of population at a whole. New finding in toxicology, diversity of chemicals used, nano-materials, pollution of water, air and soil determine a necessity to activate international collaboration and exchange of knowledge, to apply new methodology in chemical education and professional training.

Unfortunately, one day our society has discovered that our world polluted by various chemicals –  $\text{NO}_x$  and  $\text{SO}_x$ , chlorofluorocarbons HFC, lead and mercury compounds. River and surface waters contain numerous pollutants and need in fine cleaning for using. Agricultural lands contaminated with chlorine-containing pesticides and nitrates. Industrial and municipal wastes containing numerous polymers and plastics polluted soil. Well-known heavy accidents on chemical plants, Bhopal, Seveso, oil spills, the accident in Mexico gulf on BP platform, as well as numerous small scale accidents at transportation or using chemicals (chlorine, phosphorus, acids or ammonia) clearly demonstrate high risk of chemicals to life and environment. Chemical pollution or migration of chemical don't “know” national borders, and toxic chemicals contaminate very rapidly water or atmosphere of neighbor states.

At the same time, new scientific discoveries may bring new risks, including the potential of new chemical compounds being abused as chemical weapons or toxic matter by terrorists. Even humane targets of pharmaceutical industry can result in some tragic consequences that it has been in the case of thalidomide use.

Under sharp criticisms by public, chemistry also tries to change a “face of chemical industry”. Indeed, modern technological advances in chemical manufacturing are significant. It is obvious that numerous traditional chemical operations based on oil- or gas-based feedstock will use a renewable feedstock and bio-processing technologies. Process efficiency also can be significantly improved in order to minimize the environmental impact of manufacturing and to minimize by-products and wastes. Principles “Green Chemistry”, which have been recently formulated, make provision for implementation of energy-efficient processes with (near)-100 % atoms efficiency leading to drastically reduced generation of unwanted by-products, to increase selectivity and to improve the economy of reactions using standard equipment. Efficient optimized of processes have been proposed and applied to produce medicines, pesticides, fine chemicals and other high-value products for market demands.

Chemical industry has to take the best principle of modern nuclear energy industry – this is “safety culture”. But safety culture in use of chemicals should be also implemented in all spheres of human activity

In order to use chemistry, science and technology, to the benefit of society, to reduce adverse effects of chemicals and chemical accidents, we have to organize an appropriate system of chemical security. All above mentioned determines necessity to have strong control and corresponding regulation for chemical production as well as for usage of chemicals overall a life-cycle. The first very important result and excellent example of possibility to organize this complex system of chemical security, on my opinion, is the Chemical Weapons Convention.

The very important element in the chemical security and safety is the education. Unfortunately, last years we can see shortening education programs on chemistry in schools and some deficiencies in its curricula. Simultaneously with basic knowledge in chemistry, chemical education has to explain the dual-use nature of advances in chemical science and technology as well as chemicals. University curricula should include appropriate references to the International Conventions, which regulate a management with chemicals on today, their requirements, related information and ethical guidance. Ethic codes of conduct and professional codes are also important tools in chemical security.

I welcome the initiative of Polish colleagues and OPCW to organize the Tarnow Conference and to consolidate our will and activity in order to protect population and environment from negative consequences of chemical's use. Let me express my strong confidence that Tarnow Center will be very important international organization on peaceful and safe use of chemistry on the principles of high professional level, responsibility and international collaboration.