

R E P O R T S

**EUROTOX (European Societies of Toxicology)**

and

**The Nofer Institute of Occupational Medicine**



*Educational Course*

# "Principles of Risk Assessment from Chemical Exposure"

**Report and evaluation**

LODZ, POLAND 1995



## **REPORT AND EVALUATION OF EUROTOX EDUCATIONAL COURSE "PRINCIPLES OF RISK ASSESSMENT FROM CHEMICAL EXPOSURE" LODZ, POLAND, AUGUST 31 – SEPTEMBER 6, 1995**

### **SUMMARY**

Between August 31 and September 6, 1995, thirty five toxicologists from 9 countries in Central and Eastern Europe (CEEC) came to Lodz, Poland, to take part in the EUROTOX Educational Course "Principles of Risk Assessment from Chemical Exposure". A total of 12 lecturers and tutors were involved. Judging from the responses and anonymous evaluation of participants, the course was a success, and a further similar activity should be taken into consideration.

The course is believed to have made a contribution to raising the status of toxicology in the region in the following aspects:

- participants were able to gain insight into the scope and practice of modern toxicology and risk assessment which will support them in their attempts to introduce new ideas and concepts into their own work and that of their colleagues;

- they have received more than 600 pages of teaching material (lectures and case studies) of great educational and practical value and most up-to-date, which allows them to use it in further education and training on their own;

- links have been made between participants, and between participants and teachers, which may well yield some collaborative relationships in future.

### **BACKGROUND**

The objectives of the course were to offer young toxicologists an opportunity to broaden their knowledge and experience in the field of chemical risk assessment and to achieve a better understanding of the data evaluation process. The problems of risk assessment are very hot nowadays in the highly industrialized countries organized in OECD. However, in the Central and Eastern European countries (CEEC) they have not gained enough consideration and thus there is a great demand for training in this area.

The other goal of the course was to make it a platform for a friendly communication with informal discussions and an exchange of views on various matters.

### **ORGANIZERS AND SPONSORS**

The course was organized by the Nofer Institute of Occupational Medicine (NIOM) in Lodz, Poland, on behalf of the European Societies of Toxicology (EUROTOX). The core costs of the course were provided by EUROTOX. It



formed the basis for applying for additional support; finally, this funding covered roughly one third of the total costs. The rest was covered by different sponsors (see acknowledgements).

For more details concerning the funding and expenditure see section: Funding and Expenditure.

## COURSE CONTENTS

The course covered the principles of modern toxicology as can be applied to the risk assessment of chemicals with special regard to the following aspects:

**Table 1.** EUROTOX Educational Course Principles of risk assessment from chemical exposure Programme

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### 31.08.1995 (Thursday)

19.00 Get-together party and introduction of participants

### 1.09.1995 (Friday)

9.00–9.30 Opening addresses and technical matters  
 9.30–11.00 General concepts of toxicology (W.A. Hayes, USA)  
 11.30–13.00 Toxicokinetics of chemicals; absorption, distribution, metabolism, excretion (M. Jakubowski, Poland)  
 14.00–15.30 Exposure assessment (J. Gromiec, Poland)  
 16.00–17.30 Strategies and methodologies of chemicals toxicity testing (K. Rydzyński, Poland)

### 2.09.1995 (Saturday)

9.00–11.00 Genotoxicity and carcinogenicity (F. Oesch, RFG)  
 11.30–13.00 Reproductive toxicology – teratology (P. Peters, The Netherlands)  
 14.00–15.00 Epidemiology and its application in occupational health (W. Hanke, Poland)  
 15.00–18.00 Group work: case study (CSI)

### 3.09.1995 (Sunday) Excursion to Żelazowa Wola (birthplace of Chopin)

### 4.09.1995 (Monday)

9.00–11.00 Plenary discussion of group work: (CSI)  
 11.30–13.00 General principles of risk assessment. Part I (U. Ahlborg, Sweden)  
 14.00–15.00 General principles of risk assessment. Part II (U. Ahlborg, Sweden)  
 15.00–18.00 Group work (CSII)

### 5.09.1995 (Tuesday)

9.00–11.00 Plenary discussion of group work (CSII)  
 11.30–13.00 Regulations and standards (L.S. Levy, UK)  
 14.00–16.00 Tour through the Nofer Institute  
 15.00–18.00 Group work (CSIII)

### 6.09.1995 (Wednesday)

9.00–11.00 Plenary discussion of group work: (CSIII)  
 11.30–13.00 Risk perception and communication (T. Malmfors, Sweden)  
 14.00–15.00 Evaluation, discussion on course and certification.

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- hazard vs risk;
- strategies for the testing of industrial chemicals, pharmaceuticals, pesticides, cosmetics;
- interpretation of experimental toxicological studies including alternative methods and *in vitro* testing;
- the use of data on the toxicokinetics and toxicomechanics of chemicals;
- exposure assessment;
- selection of appropriate procedures for risk assessment e.g. carcinogenic vs non-carcinogenic substances.

**Table 2.** Case studies workshops

|        | Groups<br>I and II | Groups<br>III and IV             | Groups<br>V and VI |
|--------|--------------------|----------------------------------|--------------------|
| CS I   | Acrylic acid       | Carbon disulfide CS <sub>2</sub> | Vitamin A          |
| CS II  | Arsenic            | Benzene                          | Ethylene oxide     |
| CS III | Cadmium            | Polyvinylchloride                | Furnace fumes      |

The course programme is shown in Table 1 and the list of case studies in Table 2. More details on the teaching methods can be found in the next paragraph.

In general, the programme of the course was structured along a few ideas. During the first one and a half days it covered the general principles of toxicology, toxicity testing, general and organ toxicology, epidemiology and exposures. These formed an essential introductory part aimed at updating the skills and knowledge of the participants to the level necessary to understand the risk assessment procedures. Group work on case studies I started on the second day. On the third day of the course a social programme was organized for the participants and teachers. The main lectures on risk assessment and evaluation and the group work on case studies II were conducted on the fourth day. The fifth day was devoted to the problems of regulatory toxicology and group work on case studies III. On the sixth day the last 3 case studies were discussed at a plenary session which was followed by a lecture on risk perception and communication.

## TEACHING METHODS

The 60–120 min lectures were the main form of teaching. However, the substantial part of the course were practical sessions in 6 groups (of 6 participants each). The groups were selected so as to maximize the mixing of nationalities and individual experience. Case studies were prepared in advance by the teaching staff and presented to the groups; each case study to two parallel groups. Problems and practical questions were set for participants; they required group discussion, with the tutor as a moderator. When the work was finished, the group chose a rapporteur and prepared a report for the next morning presentation and plenary discussion.

Although this approach was unfamiliar to most of the participants, it was well-received and worked successfully.

In the formal anonymous evaluation conducted at the end of the course, 23% of participants declared that 'most of the material' covered by the course was new to



them; another 32% of the participants found that at least 'half of the material' was new; 45% reported that 'less than half' or 'little of the contents' were new to them. Overall 83% of participants thought that the theoretical level of the course was "Just Right", 14.3% thought that the level was to "Too High". One participant indicated that the level was "Too Low". In the same evaluation the general level of case studies and their selection for specific work requirements were found "Excellent/Good" by 63% of participants and „Poor" by 6%.

## COURSE LANGUAGE

The language of the course was English. In general, participants had an adequate level of English for both understanding lectures as well as for taking part in group discussions. In the evaluation over 66% of the participants described their understanding of English as "Very good" or "Good". Over 95% thought that the rate of English addressed at them during the course was "About Right".

## LOCATION

The course was held at the Nofer Institute of Occupational Medicine, Lodz, Poland. The course facilities were highly appreciated by the participants. A large lecture theatre and 6 seminar rooms were available. An access to PC's, laser printers, copying machines, fax, telephone connections and email was provided.

Participants were accommodated at the Institute's hostel, in single rooms, and full board at our own canteen was provided. In the course evaluation, the accommodation, teaching rooms and meals were described as "Very Good" or „Good".

## PARTICIPANTS

Publicity for the course was principally obtained through mailing announcements to national Toxicological Societies in CEEC and other European countries. Private contacts of the members of the Organizing Committee were extensively used as well. Detailed information on the course was published in two consecutive issues of the EUROTOX Newsletters.

It was originally planned that this course should be a platform for West-East communication. Unfortunately, although at first there were a few inquiries from potential participants from Western Europe, finally nobody applied. It is difficult to find reasons for this but one may assume the following:

- for Western toxicologists (especially managers responsible for financial decisions) an Eastern European institution may not be the best place to gain experience in toxicology and risk assessment,
- the Nofer Institute (as most of the CEEC research institutions) is relatively unknown in Western Europe,
- the difference in the registration fee and accommodation costs for Western and Eastern Europe participants (800 DM vs 50DM) may have been too high; however, it must be stressed that the costs of participation in a similar-length course (6-day) organized in a Western European country will be at least twice as high,
- this kind of an educational course has no formal accreditation.

We received 45 applications and decided to accept all of them. Eventually, of the 45 people we expected to participate, 35 arrived. A distribution of applicants and participants by nationality is given in Table 3.

**Table 3.** Distribution of applicants and participants by nationality

|                | Applications | Participants |
|----------------|--------------|--------------|
| Bulgaria       | 4            | 2            |
| Croatia        | 10           | 9            |
| Czech Republic | 1            | 1            |
| Hungary        | 2            | 2            |
| Latvia         | 1            | 0            |
| Lithuania      | 6            | 5            |
| Poland         | 10           | 9            |
| Romania        | 4            | 4            |
| Russia         | 2            | 0            |
| Slovakia       | 4            | 2            |
| Slovenia       | 1            | 1            |
| Total          | 45           | 35           |

The participants came from institutions of different kind, including research centres (88%), universities (26%), national governmental departments (6%), industry (14%) and NGOs (6%). 77% of participants were women.

At the end of the course, each participant obtained certificate of attendance.

### TEACHING STAFF

Two lecturers/tutors, 2 lecturers and 2 additional tutors were recruited from the Nofer Institute. The other 6 lecturers/tutors were from the USA, Sweden, Germany and the United Kingdom. A list of the teaching staff is displayed in Annex 4. Five of the teachers stayed for the whole period of the course duration, the remaining coming for two-three days only.

The competence and skills of the teaching staff were denoted as high in the anonymous evaluation by participants; the general level of the lectures was described as "Excellent" (77% of participants) or "Good" (23%).

### COURSE MANAGEMENT AND ADMINISTRATION

The management of the course was handled by the Organizing Committee from the Nofer Institute of Occupational Medicine which was also responsible for the recruitment and overall administration.



## COURSE EVALUATION

At the end of the course an evaluation questionnaire was completed by 35 participants. From the results of this questionnaire, it is evident that generally the course was well received by the participants. With respect to the course overall, 80% thought it was "Good" and 20% it was "Very Good". All participants admitted that the course would be of interest to their colleagues, and that they would recommend it to them.

Despite the fact that many of the concepts were new to participants, and that the language of the course was English, 90% of participants reported that they had understood most if not all of the course material.

Most participants believed that the right amount of time was spent on lectures and group work. The balance between the two kinds of activity was found "Very Good" by 17% of participants; "Good" by 54% and "Satisfactory" by 23% of them. Only 2/35 persons described it as a "Poor".

## FUNDING AND EXPENDITURE

The core costs of the course were provided by EUROTOX. Without this core funding the course would not have taken place. It formed the basis for applications for additional contributions. Finally, this funding formed roughly one third of the whole amount expended. Participants came at their own expense and paid a very low registration fee of 50 DM or 85 PLN. From the course budget the participants were provided with all the course materials, accommodation, full board and a social programme (get-together party, excursion to the birthplace of F. Chopin and a concert, guided tour to the Nieborów Palace). The Gillette Company, USA, invited the participants and teachers to the reception given in the Poznański Palace in Lodz on Sunday, 3 September.

Some of the contributions from sponsors referred to the course, itself, some funding was given for special expenses.

With respect to the teaching staff all but one (Dr L. Levy supported by the British Council) came at their own expense. Their accommodation costs were covered by the organizers.

## CONCLUSIONS

There is a clear demand for training in toxicology in the newly democratized CEE countries. Although in most of these countries the educational level of toxicologists may be relatively high, there are special areas of toxicology which require additional training for their better understanding. Risk assessment is definitely one of them.

Judging from the responses and anonymous evaluation of participants this course was a success, and a further similar activity should be taken into consideration. The advantages of a regional organization of such a course is that travel and accommodation costs for participants can be minimised, in comparison with the costs of a similar course outside CEEC.

Discussing the possibility of continuing this EUROTOX activity one can make the following remarks:

It is reasonable to assume that the total costs of running a course in the CEEC region, even if they are much lower than in EU, are still too high to be fully covered as the registration fee by the participants. The substantial part of the expenses connected with any similar course in future would therefore have to be covered through sponsorship from a variety of national and international sources.

However, to apply for such a support the organizers need a considerable period of time. Therefore, it is essential that the organizers and venue of the next EUROTOX Educational Course (in 1996) should be appointed as soon as possible. This refers also to the course to be held in 1997.

The participants postulated that they would rather receive the case study materials well in advance of the course, to get better prepared for group work and for better understanding of particular problems.

We believe that the general positive experience gained during the course in Lodz will encourage the development of EUROTOX Educational programme for CEEC for the coming years.

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