



ENVIRONMENTAL HEALTH PROJECT

ACTIVITY REPORT

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Development of an Environmental Health Curriculum,
Matej Bel University,
Banska Bystrica, Slovakia

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by

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ACRONYMS

ENI	Europe and the Newly Independent States (USAID bureau)
USAID	United States Agency for International Development
EHP	Environmental Health Project
MBU	Matej Bel University, located in Banska Bystrica, Slovenia
TA	technical assistance
SSZU	Specialized State Institute of Health (Banska Bystrica, Slovakia)
SZU	State Institute of Health (Martin, Slovakia)
GIS	geographic information system

EXECUTIVE SUMMARY

Background

In 1995, the USAID Bureau for Europe and the Newly Independent States (ENI) requested that the Environmental Health Project (EHP) help address the health consequences of environmental contamination in Eastern Europe. From 1995 to 1997, under the USAID-sponsored project, "Promotion of Private Health Markets," EHP conducted three simultaneous activities in Slovakia, Poland, and Romania. The activity in Slovakia focused on strengthening outreach capacity and risk communication methods used by state health agencies and municipal governments to address pollution problems affecting human health, as well as establishing health promotion activities at the municipal level. The Slovak activities were carried out in three different cities Banska Bystrica, Martin, and Trnava. As the result of these municipal programs, several universities expressed interest in developing curricula in environmental health. A 15-month curriculum development activity was undertaken in 1997-1998 with remaining funds. The locus of the curriculum development activity was the Faculty of Economics at Matej Bel University (MBU) in Banska Bystrica.

The 15-month activity is the topic of this report. Its overall purpose was to enhance the knowledge, skills, and abilities of individuals in public service positions in regional and local governments to recognize how local environmental conditions can affect community health and to effectively manage interventions designed to reduce environmental risks to public health. The activity was designed to achieve the following results:

1. An environmental health curriculum in place and taught for the first time at Matej Bel University in September 1998.
2. Students in the subspecialty, Department of Public Economy and Administration, better prepared to recognize, manage, and make decisions about environmental health issues when they eventually take positions in regional and local governments.

3. Improved capacity of Matej Bel University to teach environmental health to its students.
4. Determination of whether there is a need and market for an academic speciality in the economics and management of environmental health.

Project Activities

The activity was carried out using a combination of technical assistance visits, participatory workshops, and information exchanges to achieve the purpose and results mentioned above. After a planning visit in June 1997, EHP team members developed a detailed work plan and identified local resources (individuals and organizations) who might participate as partners in the curriculum development effort and the actual delivery of the course, as well as help disseminate the curricula and/or resulting educational materials to other universities in Slovakia.

Between October 1997 and June 1998, three workshops were held in which individuals from five different universities and several governmental organizations worked together to develop the curriculum. This interdisciplinary group identified 12 key topics for the course, developed learning objectives, key content, and possible teaching methods for each topic, and generated ideas for student projects. The participants discussed ways to make the course interesting and relevant to students, identified potential teachers and other resources needed to teach the course; and selected a Steering Committee to plan, coordinate, and prioritize activities relating to the design and delivery of the environmental health course. Between workshops, the Steering Committee expanded and elaborated the ideas developed by the larger group.

EHP team members provided technical assistance (TA) in conjunction with each workshop. They met with persons who had key roles in the development and implementation of the course in order to raise questions and provide advice on administrative and budgetary concerns as well as on technical and pedagogical issues

related to course development and delivery. The EHP team met with members of the different faculties at MBU to foster closer collaboration and build interest in a common course. Team members also made visits to monitor the start-up and progress of the course, evaluate the course and overall activity, identify lessons learned, and discuss future plans.

EHP provided both technical and educational resource materials to the project partners. At the conclusion of the course in December 1998, several teachers participated in a study tour to Krakow, Poland, hosted by EHP team member, Dr. Janusz Pokorski.

Outcomes

- C The activity successfully developed an environmental health curriculum which was taught for the first time in the fall 1998 semester at MBU.
- C The activity improved MBU's capacity to teach environmental health to its students by assembling an interdisciplinary and interinstitutional group of experts who were willing to develop educational materials and teach a course collaboratively.
- C The intense nature of the interdisciplinary and interinstitutional activities created an impetus for future collaboration among the participants.
- C The systematic and interdisciplinary approach to curriculum development, as well as the provision of technical resources and course syllabi from various academic institutions, may have a positive effect on courses and curricula at other universities participating in the activity.
- C The activity encouraged experimentation with innovative, experiential, and problem-based teaching methods, which may impact the design and teaching of courses at various universities.
- C The activity helped identify gaps in environmentally-related academic programs in Slovakia.

Lessons Learned

- C Workshops are an effective way to involve individuals from different institutions and

disciplines in curriculum development activities. They can be a "window on the world" for participants and may help reorient both curriculum content and teaching methods.

- C It is important to establish a formal mechanism—such as an interinstitutional Steering Committee—to function between workshops and technical assistance visits.
- C Unanticipated budgetary problems and entrenched institutional traditions can raise barriers to implementing a new curriculum.
- C The involvement of participants from different disciplines can enrich both the process and outcomes of an activity. A technical assistance approach that models multidisciplinary collaboration can be vital to the success of such an activity.
- C Involvement of team members from different institutions or countries in the same geographic region can be especially valuable.
- C An activity such as this needs flexibility so that changes can be made in the allocation of level of effort among team members and in the scope of work, as well as in decisions about purchasing commodities.

Recommendations

- C To help sustain the course at MBU a budget and plan for its continuation should be prepared; external teachers should be recognized and compensated; wide access to resources provided through the activity should be promoted, both within MBU and with other participating universities; and presentations about this activity should be made to other MBU faculties.
- C To promote development of additional programs in environmental health, management, and economics, MBU could develop relationships with other European universities with such programs.
- C To foster dissemination and use of the curriculum in other settings, course materials could be put on the Internet and an electronic listserv could be created.
- C Partners could pursue grant support to disseminate, adapt, and use the products of this activity in their own settings or for development of continuing education and

- distance learning programs.
- C Translation into Slovak of an up-to-date textbook could be of lasting benefit to activity participants and the future beneficiaries of such programs.
- C Non-professional teachers could benefit from an extended workshop on basic pedagogical techniques.
- C Information about interinstitutional partnerships that could link Slovak with U.S. and/or European universities involved in Environmental Health education and research should be shared with participants in this activity.

1 BACKGROUND

1.1 EHP Activity in Eastern Europe

In 1995, the USAID Bureau for Europe and the Newly Independent States (ENI) asked the Environmental Health Project (EHP) to help address the health consequences of environmental contamination in Eastern Europe. From 1995 to 1997, under the USAID-sponsored project, "Promotion of Private Health Markets," EHP conducted three simultaneous activities in Slovakia, Poland, and Romania. The activity in Slovakia focused on strengthening the outreach capacity and risk communication methods of state health agencies and municipal governments in addressing pollution problems affecting human health. The activity also helped to establish health promotion activities in three cities in Slovakia. In Banska Bystrica, the Environment Office, which already existed, identified three environmental priorities and undertook a health promotion campaign that resulted in supportive action by the City Council. The Specialized State Institute of Health (SSZU) in Banska Bystrica also developed and implemented a radon information and testing program for homeowners. In Trnava, EHP assistance led to the establishment of the Health and Environment Office and formation of a broad-based committee to develop a health and environment action plan. In Martin, the State Institute of Health (SZU) developed a health education action plan aimed at reducing children's ingestion of dust containing heavy metals from the local machinery plant.

In Poland and Romania, the focus of the activities was on the development and reform of pre- and post-graduate university programs on environmental health. The School of Public Health at the Jagiellonian University in Krakow, Poland, established a 22-hour module in environmental health for students in its health promotion certificate program and a 200-hour

post-graduate environmental health course leading to a degree in environmental health. The University of Medicine and Pharmacy in Cluj, Romania, revised its hygiene curriculum for medical students, developed the capacity to teach environmental health in its family practice residency program, and developed a continuing education module on environmental health for general physicians practicing in the local area.

1.2 Origin of Present Activity

As a result of EHP activities in Slovakia 1995-97, three universities in the partner cities expressed interest in developing curricula in environmental health:

- C Matej Bel University in Banska Bystrica (Faculty of Economics)
- C Trnava University (School of Nursing and Social Work)
- C Jesenius University in Martin (Faculty of Medicine)

At the conclusion of the health promotion activity, there were adequate funds remaining to carry out a 15-month curriculum development activity. In June 1997, the EHP team developed a work plan for the activity in collaboration with Matej Bel University. In September 1998, the activity was extended (without additional funds) for three months for EHP to provide technical assistance during the curriculum implementation phase of the activity.

The activity was designed to support USAID/ Slovakia's Strategic Objective (SO) 3.3—the reduction of environmental risks to public health. The activity involved primarily provision of technical assistance to support the design and development of curricula and educational materials in environmental health. The university was responsible for implementation and

delivery of curricula, courses, and/or lectures to the students.

1.3 Selection and Description of Matej Bel University

EHP and USAID/Slovakia considered several possible educational sites for the activity. Matej Bel University in Banska Bystrica expressed a strong interest, and a decision was made to focus the activity there, although it was agreed that faculty from other universities could also participate.

The first institution of higher education in Banska Bystrica—the Higher Pedagogic School—was founded in 1954. In 1964, the Pedagogic Faculty came into being, and in 1973, a branch of the Faculty of Commerce of the School of Economics in Bratislava was established in Banska Bystrica. Matej Bel University (MBU) was established in 1992 by the merger of the Pedagogic Faculty and the School of Economics. Thus, it is a relatively new university.

Currently, there are eight faculties (Schools) at Matej Bel University. Each faculty functions independently, and there is little, if any, interaction between them. Students enroll in a faculty for five years—the first three years are the baccalaureate study, and the final two are the master's study. Currently, approximately 7,000 students are enrolled at MBU.

The Faculty of Economics has ten different departments, one of which, the Department of Public Economy and Administration, was the primary partner in this activity. That department offers specialization in three areas:

- C economics and management of education (graduates work in school administration)
- C economics and management of health care (graduates work in health care institutions, e.g., hospital management)
- C economics and management of regional and local administrative areas (graduates work in public service for regions, municipalities, and villages)

Students in this department share a common curriculum for the first three years and then concentrate on one of the three specialty areas in

the final two years. These three specialty areas have been approved by the Ministry of Education, which makes it relatively easy to introduce new courses into existing curricula. (Developing an additional [fourth] area of specialization, such as environmental health, would be a much more complicated process.) Post-graduate study is offered in the three specialty areas in two different formats: an internal doctoral study program for full-time students funded through the state budget and an external program of study, funded by the students themselves. The latter is a form of continuing education. In health care management, for example, programs of post-graduate study are offered on demand and vary in format and length. Some may be undertaken via distance learning.

1.4 Activity Purpose, Objectives, and Scope of Work

The overall purpose of the activity was (1) to enhance the knowledge, skills, and ability of people in public service to recognize how local environmental conditions can affect community health and (2) to effectively manage interventions designed to reduce environmental risks to public health. To accomplish this purpose, EHP developed three objectives:

1. Develop a course in environmental health (EH) for at least two target audiences at MBU—students of the Faculty of Economics and students of the Faculty of Natural Sciences—by:
 - C defining the parameters of the course (e.g., number of hours, where it would fit in the existing curriculum, type of course),
 - C identifying key people and facilitating their interaction to develop and deliver the course,
 - C developing educational materials,
 - C training the faculty in new methods of teaching and course evaluation, and
 - C disseminating the curricula and materials for use at other universities.
2. Foster sustainability of the course at MBU by

working with faculty members to

- C develop a proposal and budget for the course for submission to the university,
 - C identify other resources and sources of continued support for the course (e.g., materials, computer resources, possibilities for grants, etc.), and
 - C consider whether or not a market exists for a full specialization in environmental health at the university.
3. Stimulate communication and collaboration across faculties, universities, and other institutions to enhance the teaching of environmental health.

If these objectives were met, it was anticipated that the following results would be achieved:

1. An environmental health curriculum would be in place and taught at Matej Bel University in September 1998.
2. Students exposed to the curriculum would be better prepared to recognize, manage, and make decisions about environmental health issues when they worked in positions in local governments.
3. The capacity of Matej Bel University to teach about environmental health issues would be improved.
4. MBU would know whether there was a need or demand for a specialization in the economics and management of environmental health issues.

1.5 Activity Approach and Tasks

The activity was conducted through a combination of technical assistance visits by EHP team members, participatory workshops, and information exchanges to achieve the objectives. Specific tasks included:

- C *A needs assessment* to help determine needs, knowledge, and interest in environmental health among students at MBU and their potential employers, public officers in regions and villages and staff of local institutions.
- C *Three workshops* (described in Chapter 2) for project participants, focusing on the following topics:
 - C developing a common understanding of the scope and framework of environmental health,
 - C developing a curriculum in environmental health,
 - C introducing new teaching methods, and
 - C introducing new methods for evaluating curricula and courses.
- C *Special presentations* on environmental health topics for MBU students.
- C *Technical assistance* to various partners to help ensure successful completion of the activity. This assistance included ongoing assessment of progress and problems; assistance in identifying resource materials; providing examples of educational and evaluation materials; and facilitating networking among participants.
- C *A study tour* to Krakow, Poland, for key project participants.
- C *Provision of materials* to support the development and delivery of the course.

2 OVERVIEW OF ACTIVITIES

2.1 Planning Visit (June 1997)

Three members of the team visited Slovakia to more fully develop the activity and draw up a detailed work plan. During this visit, the team began to identify and assess the interest of key MBU faculty members and to map the existing environmental health resources and abilities at the university or available to it. In addition to students in the Faculty of Economics, the team learned that students in the Faculty of Natural Sciences might be another target audience for such a course. The Faculty of Natural Sciences is home to the Department of Ecology and Environment, which offers a popular five-year program for students who will teach environmental education in secondary schools, as well as a three-year program for students who will provide environmental education through NGOs and government agencies. There was no existing coursework in environmental health in either faculty.

Considerable environmental health expertise already existed in the area, including experts in the Specialized State Institute of Public Health and the Slovak Environmental Agency, both located in Banska Bystrica, and in the Faculty of Ecology and Environmentalistics of the Technical University in Zvolen. Through information gathered in previous EHP activities, the team also identified experts in epidemiology, public health, and hygiene from other universities, including Jesenius University Faculty of Medicine in Martin, Trnava University School of Nursing and Social Work, and the Department of Hygiene at Comenius University in Bratislava. In addition to participating as teachers in a new course, these experts might also be able to provide locally relevant data, resources, and ideas that could enrich the curriculum as case studies, site visits, and possible topics for student projects.

The planning visit was instrumental in

expanding the potential target audience of the course and for identifying local resource people who might participate as partners in the activity. These partners might participate in curriculum development, delivery of the course, or dissemination of the curricula and/or resulting materials to other universities in Slovakia.

2.2 Needs Assessment

In order to provide participants with information to enhance the effectiveness of their curriculum development efforts, EHP team member Dr. Rusnák surveyed four different groups to assess their awareness of and needs relating to environmental health:

- C mayors and officers from cities and villages (N=15)
- C students of the Faculty of Economics at MBU (N=25)
- C teachers from MBU (N=12)
- C professionals from the SSZUs (N=30)

The results of the needs assessment are shown in Appendix 1. Major findings can be summarized as follows. All respondents except one were aware of environmental health as an issue, and the majority in each group considered it a serious problem that is seldom addressed. Sixty percent of mayors and officers recognized the need to employ people with at least some knowledge of environmental health. Mayors and public officers wanted those employees to be able to follow environmental issues in the community and to introduce programs leading to behavior change. The majority of respondents from the SSZUs hoped to employ graduates with doctoral-level training. The most important activities of such employees would involve evaluating and monitoring environmental health problems.

The majority of student respondents believed that a course in environmental health should be optional, although most felt that such a course would help them to find a job. Students expressed a strong preference for a course with field visits, discussions, workshops, and practical training; only 16% indicated a need for more lectures. Regarding language, 44% of students indicated that they can read English, 32% said they have no problem with spoken English, and 20% said they are unable to read or understand English. Eight of the 12 responding teachers at MBU also believed that the course should be optional. All teachers indicated a need for textbooks, and the majority noted a need for slides, overheads, and journals. Only two indicated a need to develop teaching skills. Ten teachers said that more case studies would improve the quality of their teaching, and nine said that increased cooperation with universities in other countries would improve quality.

The results of the needs assessment were presented at the first workshop, described below.

2.3 Workshop #1 (October 1997)

Thirteen people from several different universities and organizations attended the first workshop, held October 28-29, 1997, in Donovaly. It was designed to facilitate the start-up of the project. The objectives of the first workshop were to

- C describe the overall project, introduce the project team, and provide an opportunity for the project participants to become acquainted,
- C develop a common understanding of and framework for thinking about environmental health, and
- C develop organizational and operational plans and timelines for the successful completion of the project.

Along with a series of presentations, small-group activities focused on students' future roles in environmental health, and a general discussion was held on what this meant for course development. Participants then turned their attention to and reached consensus on several aspects of the proposed course. It was agreed that there are many potential students for such a

course, which meant that the course should address "core" topics, i.e., those most fundamental to the study and understanding of environmental health. The course was to be basic and introductory, emphasizing environmentally related health impacts and prevention.

An important outcome of the workshop was the creation of an interinstitutional and interdisciplinary Steering Committee to help plan, coordinate, and prioritize activities relating to course development. The six-member committee was charged with developing a first draft of the curriculum, identifying potential teachers and resource people for the course, and identifying materials that might be useful for course development or for teaching. The Steering Committee would be the primary body working on the course between EHP visits and workshops.

2.4 Workshop #2 (February 1998)

A two-day workshop was held in Banska Bystrica February 24-26, 1998. It was designed for the critique, elaboration, and modification of an environmental health curriculum presented by the Steering Committee. Eighteen participants attended from two faculties at MBU, Jesenius University in Martin, the Technical University of Zvolen, Trnava University, University of Bratislava, and the SSZU in Banska Bystrica. Specific workshop objectives were to

- C discuss, refine, and elaborate the proposed curriculum;
- C consider ways to make the course more interesting and relevant to students;
- C identify potential teachers and other resources needed; and
- C define the next steps in the project.

The workshop used a combination of small-group and large-group activities to develop specific topics for inclusion in the curriculum. Participants generated ideas for topics in small groups. These proposals were then discussed and debated in plenary session. EHP team members made presentations on the curriculum development process, how to develop educational objectives, and development of an

environmental health curriculum in Krakow. The most important outcome of the workshop was identification of 12 key topics for inclusion in the curriculum and the development of learning objectives, key content, and possible teaching methods for each topic. The participants reached agreement on the role of the Steering Committee:

- C to function as the final arbiter of course content;
- C to allocate time to the various topics;
- C to identify quality guarantors for each topic; and
- C to select lecturers.

Ideas for promoting and marketing the course were also discussed.

2.5 Workshop #3 (July 1998)

The third and final workshop was held in Banska Bystrica July 1-2, 1998. It focused on teaching methodologies and evaluation. Ten people participated in the workshop, representing the Faculties of Economics and Natural Science at MBU, Jesenius University in Martin, Trnava University, the SSZU in Banska Bystrica, and the Slovak Agency for the Environment. The purpose of the workshop was to examine innovative and interactive teaching methods and their potential application to the new environmental health course and to consider different methods of evaluation. Specific objectives of the workshop were as follows:

- C examine concepts of learning styles and experience-based learning as they apply to students taking the course,
- C observe, practice, and analyze the use of the various teaching techniques (brainstorming, role-playing, case study, and demonstration),
- C review the proposed curriculum and suggest appropriate instructional methods for its use, and
- C discuss and suggest methods for course and student evaluation.

The workshop was highly interactive and experiential. Participants engaged in demonstrations of several innovative teaching methods, including role playing; a case study

developed by the EHP team using demographic, health, and air quality data obtained from the SSZU; and a computer demonstration of the geographic information system (GIS) presented by the Slovak Environmental Agency. These group activities were supplemented by brief presentations on adult learning, an overview of teaching techniques, experience-based learning, and methods for evaluating both the course and the students. In small groups, participants also developed ideas for student projects and re-examined the proposed curriculum in order to suggest necessary modifications, including opportunities for using innovative teaching methods and allocation of class time across topics. It was announced at this workshop that Dr. Pavol Adámek had been appointed course director and that all administrative arrangements had been made for including the course in the calendar for the fall semester.

2.6 Technical Assistance and Other Activities

The workshops were the primary vehicles for facilitating collaboration among institutions and faculties for the development of the environmental health curriculum. Additional activities supplemented and facilitated the important outcomes of the workshops. Some of this work was done during the extension period (September-December 1998) when the course was actually taught.

2.6.1 Technical Assistance

In conjunction with each workshop, EHP team members met with persons who had key roles in the development and implementation of the course, including the Vice Rector of MBU, members of the two faculties involved, and representatives from local agencies and institutions who provided important resources for the course in terms of teachers, materials, projects, and other educational experiences. During these meetings, team members raised issues and provided advice on administrative and budgetary concerns, as well as on technical and pedagogical issues related to the development and implementation of the course. The technical assistance visits also focused

on networking; EHP team members met with members of various faculties at MBU in an effort to foster closer collaboration on and interest in a common course.

As discussed below, the course was taught in the fall 1998 semester (October-December 1998). During that period, Dr. Martin Rusnák made several visits to MBU to monitor the start-up and progress of the course. He met with the course director, observed several class sessions, and provided feedback to the course director and the teachers. A final visit was made December 4-6, 1998, at the end of the activity period. The purpose of the visit was to meet with the Vice Rector, the course director, and the teachers who participated in the course in order to (1) evaluate the course and the overall project; (2) identify lessons learned; and (3) discuss plans for the future.

2.6.2 Special Sessions with MBU Students

At the suggestion of the Vice Rector and partners from the Faculties of Economics and of Natural Science at MBU, EHP team members made three special presentations on relevant environmental health topics for students and faculty members during their visits for workshops. These presentations helped publicize and promote interest in the upcoming course as well as provide the latest information on technical areas within environmental health. They also provided an opportunity to demonstrate the use of interactive teaching methods with students and faculty. Students from both faculties attended the sessions, which addressed the following topics: (1) an introduction to the field of environmental health; (2) risk communication; and (3) environmentally related disease and health promotion. The sessions were well attended (60 to 80 students per session) and each concluded with a lively question-and-answer period.

2.6.3 Provision of Resources

EHP provided both technical and educational resource materials to assist with course development and implementation. Each of the participating universities received a copy of a basic textbook in environmental health produced by WHO, along with a copy of the teacher's guide, portions of which were translated into Slovak. The activity also provided additional books, journals, and course syllabi. By agreement among participants, these materials are housed in the Faculty of Economics and remain available to participants in the activity, as well as to other faculty members and students at MBU. In addition to the printed resources, the project provided other teaching aides, including a flip chart stand and a supply of paper.

2.7 Study Tour

From December 16 to 18, 1998, teachers in the course participated in a three-day study tour to Krakow, Poland, hosted by EHP team member Dr. Janusz Pokorski. Dr. Pokorski had worked on the earlier EHP activity (1995-97) to develop a curriculum for a 22-hour environmental health module for students in the public health program at Jagiellonian University in Krakow. The purpose of the December study tour was (1) to facilitate teachers' sharing knowledge and experience in environmental health education, research, and practice and (2) to further enhance collaborative relationships between and among the participants from MBU, Jesenius University in Martin, Trnava University, Jagiellonion University, and the SSZU and Slovak Environmental Agency in Banska Bystrica. The study tour was designed to allow the teachers from MBU to visit and share experiences with their counterparts in Krakow. Three of the six teachers involved in the MBU course participated in the study tour, along with EHP team members Rusnák and Pokorski. The schedule of activities is included as Appendix 2.

3 ACHIEVEMENTS AND RESULTS OF THE ACTIVITY

3.1 Planned Outcomes

As mentioned in Chapter 1, the activity was designed to address USAID/Slovakia's S.O. 3.3—reduced environmental risks to public health—through the education of students who are likely to work in public service positions in Slovakia's regions, towns, and villages, as well as those who may end up working for government agencies, NGOs, schools, and health care facilities. Those individuals will be in positions to affect environmental risk reduction through planning and funding interventions, providing public education, and promoting beneficial policies. Curriculum and course development was a necessary first step in this process. A variety of indicators were developed to track and assess the most immediate outcome—the development and implementation of a curriculum in environmental health. The work plan was designed to achieve the four results discussed below.

1. An environmental health curriculum would be in place and be taught at Matej Bell University in September 1998.

The activity was successful in developing an environmental health curriculum, which was taught for the first time in the fall 1998 semester. Faculty members from the involved institutions actively participated in this effort through their attendance at the three workshops. An interinstitutional and interdisciplinary Steering Committee assumed primary responsibility for developing the environmental health curriculum and planning how the course would be implemented at MBU. As shown in Appendix 3, the curriculum was broken down into 12 topic areas, each to include educational objectives, key content areas, and suggestions for teaching methods.

Although the course was originally designed for a 12-week semester, it was

curtailed because budgetary problems at MBU were resolved by shortening the fall semester by two weeks. The class met once a week for 10 weeks in 1.5 hour sessions. (The actual schedule is shown in Appendix 4.) As planned, persons from different institutions and universities taught, including individuals from Jesenius University in Martin, the Faculty of Economics at MBU, the SSZU, and the Slovak Environmental Agency. Each teacher prepared numerous handouts for the students, to accompany and supplement the class sessions. These materials are available in Slovak on request from EHP. Handout materials are unusual at MBU. Their preparation and use by the course teachers represents an important advance in teaching methodology.

2. Students exposed to this curriculum would be better prepared to recognize, manage, and make decisions about environmental health issues when they worked in positions in local governments.

Twenty-seven fifth-year students from the Department of Public Economy and Administration in the Faculty of Economics elected to take the course. Attendance at each session ranged from 63 to 81%; this is considered quite good at MBU. The course was designed to address real-world environmental health issues and to provide practical information that would help students in their future managerial and administrative roles. Students were asked to evaluate the usefulness of each session for their future practice. On a scale of 1 to 5, with 5 being most practical, the "usefulness" scores ranged from 2.9 to 4.3, with a mean of 3.65. In other words, students considered the course to be above average in utility. A summary of the students' evaluation of the course is included in Appendix 5.

The course was taught in the Faculty of

Economics. The original plan was for the course to be open to students from the Faculty of Natural Sciences as well, but for a variety of reasons (discussed below), that did not happen. Instead, only students from the Faculty of Economics took the course. There is a plan to integrate segments of the environmental health curriculum into the existing coursework of baccalaureate students in the Faculty of Natural Sciences. The teachers, however, will be those who taught the course in the Faculty of Economics.

This was the first course in environmental health ever taught at MBU. Although introductory in nature, the course provided the students a unique opportunity to learn about environmental issues and their related health risks. The impact of this course on graduates' actions in the future as public administrators and health care managers cannot be assessed at this time, but the course did introduce students to an important social, economic, and public health problem and provided information on how they might begin to understand and address environmental health problems in their future professional roles. The adaptation and use of the course in the Faculty of Natural Sciences will enhance the health-based knowledge of students who eventually will teach ecology and environmental education in schools and/or through NGOs.

3. The capacity of Matej Bel University to teach about environmental health issues would be improved.

MBU already had teachers with some environmental expertise, specifically in environmental policy and environmental health (in the Faculty of Economics) and ecology (in the Faculty of Natural Sciences). However, the broad range of resources and areas of expertise needed to teach the new course on environmental health were not available within MBU. The course required specialists in the fields of epidemiology, health effects, the work and home environments, and risk assessment, as well as persons able to provide information on actual environmental health problems in Slovakia. By assembling an interdisciplinary and interinstitutional group

of experts who were willing to work collaboratively in the development of educational materials as well as to teach the course, the activity made these additional resources available to MBU, thus improving its capacity to teach environmental health to its students in the future. These external resources are important for the university, as it is unlikely that it would have been able to gather the needed expertise by itself in the near future. The numerous handouts and course materials produced, now available in electronic format, will make it easier to teach the course in the coming years, even if the teachers vary. The activity helped establish experience in and an appreciation for collaboration that will enhance the capacity of MBU, and perhaps its partners, to continue and even enlarge the scope of environmental health education for its students.

4. MBU would know whether there was a need or demand for a specialization in the economics and management of environmental health issues.

The assessment conducted early in the activity confirmed the need for public officials and managers with some knowledge and skill in environmental health issues, including the ability to follow environmental factors in the community, monitor and evaluate environmental health problems, and introduce programs to improve the situation. According to the Vice Rector, MBU has a long-term plan to help meet this need. Within the next 2 to 3 years, the Faculty of Economics plans to incorporate some aspects of the new environmental health course into its post-doctoral and continuing education programs. If evaluated favorably, that may lead to the establishment of a baccalaureate program in environmental health management in the Faculty of Economics. After that, MBU would like to establish a new Faculty of Public Health, with a focus on managerial and economic issues. That faculty would include environmental health as one of its core areas of study.

3.2 Other Outcomes

In addition to the successful achievement of the planned outcomes, the activity had or is likely to have other positive effects.

- C The intense nature of the interdisciplinary and interinstitutional collaboration in curriculum development has created an impetus for future collaboration. A member of the Steering Committee said that the activity established “deep roots for the future; not just for one course and not limited to one university and one faculty.” It established a “trajectory and tradition for collaboration” among the participants.
- C The systematic and interdisciplinary approach to curriculum development, as well as the provision of books, journals, and course syllabi and materials from other academic institutions, may have a positive effect on the courses and curricula in place at the other universities participating in the project. One Steering Committee member noted that the project participants from his university are now more motivated and better informed in matters relating to curriculum development and course evaluation.
- C Many universities have been slow to move

beyond the traditional lecture format in the classroom. The project encouraged experimentation with innovative, experiential, and problem-based learning methods. It is possible that information about and experience with these methods provided through the activity will have an impact on the ways other courses are designed and taught at other universities.

- C The activity tapped into existing expertise and helped identify strengths and gaps in environmentally-related academic programs. The Technical University at Zvolen provides educational programs in environmental science; Jesenius University in Martin and Comenius University in Bratislava provide training and education in occupational and environmental medicine, epidemiology, toxicology, and other medical disciplines. Trnava University includes public health in its nursing education programs. It is possible that this activity has helped to make Matej Bel University the locus of educational programs in environmental management, policy, and economics.

4 LESSONS LEARNED

The activity provided numerous opportunities for the EHP team and the participants to reflect on and learn from their joint activities.

4.1 Lessons about Curriculum Development

The three workshops and the Steering Committee meetings were the primary vehicles for the project's curriculum development activities. At the end of each workshop, participants provided written and oral feedback on the experience, the results of which were summarized and included in each workshop report. That information, along with observations of the EHP team, suggest several important lessons for curriculum development activities.

- C Workshops are an effective way to involve individuals from different institutions and disciplines in curriculum development activities. Activity participants used the workshops very effectively to map out the content of the course, debate priorities, analyze the relevance of different topics to students' future roles, and identify core competencies. Participants were particularly appreciative of meeting in a relaxed and supportive atmosphere that encouraged the free exchange of ideas. They valued the opportunity to make personal contacts and to work together towards clearly articulated goals.
- C In such an activity, it is important to establish a formal mechanism for participants to continue their curriculum development work between workshops and technical assistance visits. Ideally, this mechanism should be created and defined by the participants themselves. In the Slovak case, an interinstitutional and interdisciplinary Steering Committee provided the continuity and did

the hard work needed to develop the curriculum in detail and to plan for its implementation.

Descriptions of courses and examples of curricula, educational materials, and evaluation tools from other universities are very useful to those involved in curriculum development.

4.2 Lessons about Implementation

It may be easier to develop a curriculum than to actually implement it. Budgetary and administrative issues can have an important impact on the introduction of a new curriculum. In this activity, several important lessons were learned.

- C Even if formal approval for teaching a new course is not required, there may be administrative deadlines that must be met, such as listing the course in the student catalogue of course offerings.
- C If the new course is an elective, special efforts may be needed to promote the course among the student body. At MBU, informational flyers and posters were displayed in the Faculty of Economics.
- C Unanticipated budgetary problems can arise which make it difficult or impossible for the university to keep its commitments. In the fall of 1998, a severe budgetary shortage at MBU resulted in a shortened (10-week) semester and a need for the activity itself to provide a modest sum of money as honoraria for outside lecturers who taught the course. In the future, MBU is expected to provide this modest support.
- C Despite the best of intentions, it may be impossible to transcend traditional institutional barriers. As noted earlier, the

activity sought to develop and teach one course that would be attended by students from two different faculties at MBU—the Faculty of Economics and the Faculty of Natural Sciences. Although that would have been the most efficient way to teach environmental health to the students of those two faculties, it did not work out. In addition to logistical and organizational problems, such as different time schedules in the two faculties, the tradition of working and teaching in totally separate domains proved impossible to overcome. It is not clear whether members of the two faculties had either the will or the incentives necessary to make the interfaculty course a reality. Instead, the full course will be taught in the Faculty of Economics; portions of it will be integrated into the Faculty of Natural Sciences, using the same materials and instructors.

- C When implementation requires cooperation and the active involvement of instructors from different institutions, leadership should be vested in an individual as course director who has a personal and professional commitment to providing a high-quality course. Dr. Pavol Adámek provided such leadership and coordination for successful implementation of the course.
- C When teaching a multi-instructor course for the first time, it is important that the course director attend each session to provide continuity for the students and to gain an overview of the course as delivered. Dr. Adámek did this. It is also important that the instructors have an opportunity to share their impressions and ideas for improving the course. This also occurred.

4.3 Other Lessons

- C The involvement of professionals from different disciplines enriched both the process and the outcome of the activity. In the words of the Vice Rector, the activity “opened a new approach in university education...the Slovak system needs this interdisciplinary

approach.”

- C The technical assistance approach that modeled multidisciplinary collaboration was vital to the success of the activity. EHP team members came with diversity of expertise and experience. Each made an important contribution, but together they also provided many examples of how an interdisciplinary team can collaborate to accomplish clearly defined objectives.
- C It was especially valuable that a team member came from the same geographic region, with experience in curriculum development. Dr. Pokorski had a special appreciation for the issues and constraints that his Slovak colleagues would encounter in their efforts to develop and implement a new curriculum.
- C It is important to appreciate the great difficulty that university faculty may have in gaining even minimum access to resource materials, such as textbooks, journals, curricular innovations, etc. For some instructors, it is difficult to keep up with what is happening in their own field of expertise. Workshops, such as those provided through this activity, can be a “window on the world” for participants and can help to reorient both curriculum content and teaching methods.
- C It is important to retain some flexibility in the allocation of level of effort among team members and in the scope of work, as well as for the purchase of commodities. The activity in Slovakia was designed to run for 15 months. It was extended an additional three months to provide assistance while the course was actually being taught. The scope of work originally called for four workshops. Participants’ busy schedules made this difficult, and a mutual decision was made to hold three workshops but to expand the number of technical assistance visits. The flexibility to make these adjustments helped contribute to the activity’s overall success.

5 RECOMMENDATIONS

5.1 Ways to Ensure Sustainability of the Environmental Health Course at Matej Bel University

Several steps have already been taken to ensure the sustainability of the environmental health course within the Faculty of Economics at Matej Bel University. Having been taught once, the course is now formally listed in the schedule of courses offered each year. Course materials have been produced in electronic format, making them easy to revise, update, and duplicate. The Faculty of Economics has begun to assemble a resource library on environmental health in the form of textbooks and journals. However, additional steps could be taken to ensure sustainability of the course.

- C Next year, the department should prepare a budget and submit it to the appropriate authorities. The budget should include all costs associated with teaching this course, such as honoraria to outside lecturers, duplication of handouts, audiovisual supplies and equipment, and secretarial and other administrative support.
- C To continue their involvement, external teachers must feel they are a valued resource for the university. Adequate compensation is, of course, essential, but the university could also find ways to further recognize their contribution, e.g., adjunct faculty appointments, certificates of appreciation, etc.
- C The books, journals, and other printed resources provided through the activity should be catalogued, publicized, and made easily accessible to teachers and students at MBU, as well as to persons from other universities or agencies who would like to develop or enhance the teaching of environmental health at their institutions.
- C The Faculty of Economics should determine whether the course should be obligatory or elective in the Department of Public Economy and Administration. It has been suggested that it be obligatory for those students specializing in public management and administration. If, however, the course remains optional, continued efforts will be needed to publicize and promote it within the student body. This is especially important because environmental health is a new area of study for students of public management and administration.
- C The course will be more sustainable if it stands out as creative, interactive, and practical. If the course provides students with opportunities to learn about issues outside the classroom through hands-on projects and site visits and through interaction with an array of distinguished teachers from different organizations, its reputation will grow. These opportunities can be advertised in promotional materials.
- C The course will also be more sustainable if students know their feedback is taken seriously. This year, students suggested the addition of a class on healthy lifestyles and the inclusion of a field visit when the course is taught again. These suggestions should be acted upon to the extent possible.
- C It might be beneficial to broaden awareness of the environmental health course and its accomplishments throughout MBU, perhaps through an interfaculty presentation by members of the Steering Committee and the course instructors. That might build support for an inter-faculty course and/or the establishment of a broader or more formalized program of study in environmental management and economics.

5.2 Ideas for Disseminating Course Materials to Other Settings

- C Participants in this activity have worked together over a year and have developed personal relationships. They are interested in continued collaboration and adapting the course for use at other universities. Helping participants communicate with each other about their work and about the curriculum might help sustain interinstitutional interest in it and possible use of the course elsewhere. Putting course materials on the Internet would be a first step. An electronic listserv would also be helpful.
- C The partners involved in this activity should consider pursuing additional sources of grant funds to disseminate, adapt, and use the products of this activity in their own institutional settings, for continuing education programs, and in distance learning programs.

5.3 Ideas for Future Curriculum Development Projects

Participants and EHP team members offered several suggestions for future curriculum development projects.

- C Because printed resources on environmental

health in Slovakia are scarce, it might be helpful to select an up-to-date textbook (like the WHO publication on environmental health) and use project funds to translate it. This might be a more effective use of donor funds in the long-run than hosting yet another workshop. [Note: In the Slovakia case, participants agreed not to use the limited budget for translation of the WHO text.]

- C Non-professional teachers could benefit from an extended workshop on basic pedagogical techniques.

5.4 Other Recommendations

- C As MBU moves forward in developing courses or programs of study in environmental health, environmental management, and environmental economics, it should make contact with European universities that have similar programs.
- C Information about possible interinstitutional partnerships that could link Slovak and U.S. and/or European universities involved in environmental health education and research should be shared with participants in the activity.

Appendix 1

Results of Needs Assessment

SLOVAKIA: Environmental Health Curriculum Development Martin Rusnák, MD, PhD

GROUP 1: Elected governments of cities and villages

No. of respondents: 15	average age: 45.5	female: 6	male: 9
mayors: 9 other: 6	university education: 8	other 7	
Term EH is known:	15	100%	
Situation of environment and its effects on health			
serious	8	53%	
rarely addressed	8	53%	
not serious	0		
Being faced with problems of EH	15	100%	
Most frequently, dealing with problems of			
relation of environment with occupation	13	87%	
diseases related to environmental pollution	11	73%	
community and EH management	8	53%	
Least frequently, dealing with			
management of risk	87	13%	
measurement of quality and environment exposure	5	33%	
Need to employ people with			
magister-level training	4	27%	
doctoral-level training	4	27%	
any level	9	60%	
Tasks for such employee (most frequent answer)			
to monitor factors of EH	10	67%	
to introduce programs of behavioral changes	9	60%	
Least frequent answer			
cooperation with other organizations and NGOs	5	33%	

GROUP 2: Students of Faculty of Economics UMB

No. of respondents: 25 average age: 21.1 female: 16 male: 9

Field of study:
economics and management of health care: 14 public economy and administration: 11

Grade III. 14 IV. 1 V. 10

Term EH is known: 25 100%

Situation of environment and its effects on health

rarely addressed	21	84%
serious	19	76%
adequately addressed	0	
not important	1	4%

Most frequently faced with issues of

diseases related to environmental pollution	23	92%
relation of environment and occupation	22	88%
possibilities and barriers for solutions	18	72%

Least frequently

management of risk	4	16%
relation of exposition and health	4	4%

Need to teach EH

as optional course	18	72%
at baccalaureate level	12	48%
doctoral and as a part of other disciplines	8	32%

Preference for what is included in a course

field visits	22	88%
discussions	17	68%
more training than lectures	15	60%
more lectures	4	16%

Graduation from EH will facilitate finding a job

probably and don't know	11	44%
yes	4	16%

A text in English?

read English	11	44%
without any problems	8	32%
does not read English	5	20%

Would technology support learning?

Yes, it facilitates learning	16	64%
no experiences	8	32%

GROUP 3 Teachers from UMB

No. of respondents: 12 average age: 42 female: 4 male: 8
 prof: 4 dr+eng+mgr: 8 average length of teaching practice: 15 years

Term EH is known:	25	100%
Situation of environment and its effects on health		
serious	9	82%
rarely addressed	6	55%
adequately addressed	0	
not important	0	
Do you include EH knowledge within teaching		
mention it in courses	7	64%
Areas of EH most known		
relation of env. and health	7	64%
role of community	6	55%
Areas of EH least known		
epidemiological methods	1	9%
measurement of quality and exposure	2	18%
Education in EH should be		
as optional topic	8	73%
in baccalaureate and magister study	1	9%
No. of hours for teaching EH course?		
several during semester	7	64%
more than 10 hours per week	1	9%
Most urgent needs for teaching support		
leaning book or reader	11	100%
other educational materials (overhead transparencies, slides)	8	73%
journals	8	73%
Least needed for teaching support		
own education/teacher training	2	18%
What will help increasing quality of teaching		
mostly		
more case studies	10	91%
more cooperation with universities abroad	9	82%
least		
more space for lectures	0	

GROUP 4: Employees from State Health Institutes

No. of respondents: 30	average age: 49	female: 13	male: 17
MD: 30	director: 17	other: 13	
Term EH is known:	29	97%	
Situation in environment and its effects on health			
serious	23	77%	
seldom addressed	12	40%	
adequately addressed	1	3%	
not serious	2	7%	
Use of EH knowledge in professional activities	30	100%	
Knowledge of EH issues			
mostly			
diseases related to environment	29	97%	
methods of epidemiology	28	93%	
relation of environment and health	27	90%	
least			
measurement of quality and exposure	27	90%	
management of risk	19	63%	
Desire to employ EH graduate			
mostly			
doctoral-level	22	73%	
least			
with other specialization but with some lectures in EH	4	13%	
Most important tasks to be addresses			
evaluation of monitoring	25	83%	
monitoring	24	80%	
Least important tasks			
cooperation with other organizations	14	47%	
research and science	12	40%	

Appendix 2

Schedule of Study Tour Activities

16 Dec 1998	Around 13.00	Arrival from Banska Bystrica to Krakow
	15.00	Meeting in Department of Ergonomics of the Chair of Occupational Medicine and Environmental Diseases, Jagiellonian University
	19.00	Informal dinner at home of Dr. Janusz Pokorski
17 Dec	8.30 - 12.00	Institute of Occupational Medicine and Environmental Health in Sosnowiec (Silesia)
	13.00 - 14.00	Scientific meeting of the Krakow Division of the Polish Society of Environmental Medicine
	14.00 - 15.00	Lunch in the Clinic of Toxicology and discussion with Professor J. Pach, Head and Chair of Occupational Medicine and Environmental Diseases
	15.00 - 19.00	Free time
	19.00	An official dinner with the Vice Rector of Jagiellonian University; talk about future cooperation
18 Dec	8.30 - 10.00	Institute of Public Health of Jagiellonian University (former School of Public Health), contact with Environmental Health group.
	around 14.00	Departure for Slovakia

Appendix 3

Elaborated Environmental Health Curriculum

ENVIRONMENTAL HEALTH COURSE

Proposed Curriculum

February 24, 1998

1. Health and Environment -- Introduction

A) Educational Objectives:

- i. Acknowledge the relevance of environmental problems for health
- ii. Describe the relationship between environmental factors and health
- iii. Define the field of environmental health and its relationship to other sciences
- iv. Explain the basic philosophy, approach, and activities of environmental health.

B) Key Content:

- i. Overall determinants of health
- ii. How the environment affects health
 - a) factors
 - b) media
 - c) circumstances
 - d) pathological examples
- iii. Influence of human activity on the environment and vice versa
- iv. Working definition of environmental health
- v. Hierarchy of goals, and activities in environmental health
 - a) prevention
 - b) minimization
 - c) rehabilitation and remediation
 - d) evacuation
- vi. Actors involved in environmental health
 - a) interdisciplinary
 - b) intersectoral
- vii. Your future roles in environmental health

C) Teaching Methods:

- i. Lecture, with audiovisuals
- ii. Questions to students
- iii. Short discussions

2. Situation of environmental health in Slovakia and the world

A) Educational Objectives:

- i. To identify the measures (indicators) of health and of the environment
- ii. Be able to interpret those measures and indicators and the relationship between them.
- iii. Be familiar with information resources and know how to make use of them.

B) Key Content:

- i. Measures and indicators of health, both direct and indirect, at the international, national, and regional levels.
- ii. Measures and indicators of environmental quality at the international, national, and regional levels.
- iii. Most important environmental problems in Slovakia, especially with respect to health.
- iv. Discussion of potential value of these indicators for students' future positions.

C) Teaching Methods:

- i. Lecture, with slides, tables, and graphs
- ii. Dialogue, questions and answers

3. Risks of Environment and Health
 - A) Educational Objectives:
 - i. Recognize and characterize different types of environmental health risks, their sources, and their possible effects on health.
 - ii. Understand the range of possible solutions to environmental health problems.
 - B) Key Content:
 - i. Differential risk and hazard in the area of environment and health.
 - ii. Types of risk -- physical, chemical, biological, psychological, mechanical
 - iii. Multiple risks and interactions
 - iv. Different levels of risk: individual, group, global, catastrophe
 - C) Teaching Methods:
 - i. Lecture, with slides, tables, and graphs
 - ii. Dialogue, questions and answers
4. Risk Assessment
 - A) Educational Objectives:
 - i. Understand the basic steps of risk assessment (recognition of risk, dose-response relationship, exposure standards, characterization of risk)
 - ii. Explain the concepts of risk perception and risk acceptability
 - iii. Understand probabilities and uncertainties associated with risk assessment.
 - iv. Apply these steps in a case study.
 - v. Specify necessary data
 - B) Key Content:
 - i. How risk is recognized (toxicology, epidemiology, chemistry, etc).
 - ii. Understand why the risk is there
 - iii. How to measure the risk and interpret the results of risk assessment
 - C) Teaching Methods:
 - i. Lecture
 - ii. Case study, with video
 - iii. Discussion
5. Risk Management
 - A) Educational Objectives:
 - i. Communicate effectively with public about risk, including the role of the media
 - ii. Understand the mechanisms for managing risk (technologies, policy, legislation, economics, traditions)
 - iii. Recognize the important role of prevention in risk management.
 - B) Key Content:
 - i. Remediation methods and their effectiveness, including engineering technologies
 - ii. Clean production and other preventive measures
 - iii. Disaster/emergency response
 - iv. Basic management steps in dealing with risk management
 - C) Teaching Methods:
 - i. Lecture
 - ii. Problem simulation
 - iii. Discussion
6. Institution Provision of Environmental Health
 - A) Educational Objectives:
 - i. Understand the institutional structure for dealing with environmental health problems, including international, governmental, and non-governmental
 - ii. Get insight into the opportunities and obstacles in dealing with these different institutions.
 - iii. Be able to propose solutions to a concrete situation
 - B) Key Content
 - i. Hierarchy and responsibilities of international, governmental, and non-governmental institutions
 - ii. Economical, political, legislative, psychological, social, and other constraints
 - C) Teaching Methods:
 - i. Written materials distributed before the session

- ii. Discussion
 - iii. Case study
- 7. Legislative Aspects of Environmental Health
 - A) Educational Objectives:
 - i. Interpret the most important environmental laws
 - ii. Discuss civil rights in environment and health
 - iii. Express ideas for new legislation in their own communities
 - B) Key Contents
 - i. Overview of most important existing laws -- international, national, and local
 - ii. How environmental laws are developed.
 - iii. Rights of citizens
 - C) Teaching Methods
 - i. Written materials distributed before the session
 - ii. Discussion
 - iii. Case study
- 8. Work Environment
 - A) Educational Objectives
 - i. Recognize specific risks of the work environment, such as noise, chemical agents, etc.
 - ii. Give examples of diseases and conditions associated with these specific risks.
 - iii. Discuss the legal and economic consequences of occupational disorders.
 - iv. Understand the roles and duties of employers, government institutions, and other organizations in health protection of workers.
 - B) Key Content
 - i. List of workplace risks and possible health effects
 - ii. Health and social insurance and specific compensation for work-related problems.
 - iii. Legal standards, norms, and institutions in securing healthy work environment.
 - iv. Prevention and protection in the work environment.
 - C) Methods
 - i. Lecture, with video
 - ii. Discussion
 - iii. Field Visit
- 9. Living Environment
 - A) Educational Objectives
 - i. Elaborate the term living environment, such as urban, rural
 - ii. Understand how the quality of the living environment can affect health.
 - iii. Describe how public officials can influence the health of the living environment.
 - B) Key Content
 - i. Introduce environmental factors that affect health in living environments
 - ii. Differences in health risks due to the environment in urban and rural areas
 - iii. Sources of risk and methods to control them.
 - iv. Healthy Cities Project
 - C) Methods
 - i. Lecture
 - ii. Essay
 - iii. Excursion
- 10. Economics and Environmental Health
 - A) Educational Objectives
 - i. Discuss the economic impact of environmental health problems, both monetary and nonmonetary.
 - ii. Discuss positive and negative impacts of a market economy on environmental health
 - iii. Understand the strengths and limitations of cost-benefit analysis for environmental health
 - B) Key Content
 - i. Monetary costs of controlling and not controlling environmental health problems.
 - ii. Non-monetary costs of controlling and not controlling environmental health problems, such as personal and family well-being, enjoyment of a clean environment, etc.

- iii. Incentives and disincentives in a market economy for dealing with environmental health.
- iv. Elements of cost-benefit analysis and its use in environmental health.

- C) Methods
 - i. Lecture
 - ii. Discussion
 - iii. Case Study
11. Ethics and Environmental Health
- A) Educational Objectives
 - i. Explain basic moral and ethical principles relevant to environmental health.
 - ii. Discuss the sources of ethical conflicts and the most common ethical issues in environmental health.
 - iii. Recognize duties and responsibilities of individuals, organizations, and society in environmental health.
 - B) Key Content
 - i. Moral and ethical principles applied at the individual, organizational, and societal levels.
 - ii. Common ethical conflicts and problems Making difficult choices in environmental health with potential social impacts
 - iii. Making difficult choices in environmental health with potential social impacts
 - C) Methods
 - i. Discussion
 - ii. Role Play
12. Applying Lessons Learned: Making an Intervention in Environmental Health
- A) Educational Objective
 - i. Plan an intervention.
 - ii. Prepare a budget.
 - iii. Evaluate the effectiveness of the intervention.
 - B) Key Content:
 - i. Elements of the planning process
 - ii. Fund-raising
 - iii. Overcoming obstacles
 - iv. Public involvement and support
 - v. Management of an intervention
 - C) Methods
 - i. Managerial game
 - ii. Methods of evaluation

Appendix 4

Course Schedule

DATE	TOPIC	LECTURER
5/10/98	Introduction - organization of course sessions	Adámek
12/10/98	Environmental health - introduction	Straka
19/10/98	Situation in health and environment in Slovakia and the world	Slotová
26/10/98	Risk assessment - environmental health	Gondová
2/11/98	Case studies	Gondová
9/11/98	Legislative aspects of environmental health	Adámek
23/11/98	Occupational health	Drímal
30/11/98	Institutional background	Švihlová
30/11/98	Environment in the home	Adámek
7/12/98	Conclusion - exam	Adámek

Two lectures were combined in one class session, 30/11/98.
No lecture was given 16/11/98.

Appendix 5

Student Evaluation of the Course

EVALUATION FORM

Date:

Tutor:

1. Evaluation of the topic:

Interesting 5 4 3 2 1 Dull

2. Understandability:

Understandable 5 4 3 2 1 Not Understandable

3. Pace of Education:

Adequate 5 4 3 2 1 Inadequate (too fast, slow)

4. Use of educational tools:

Optimal 5 4 3 2 1 Inadequate

5. Students' cooperation

Active 5 4 3 2 1 None

6. Complexity of the topic

Too complex 5 4 3 2 1 Too simple

7. Usefulness for future practice

Practical 5 4 3 2 1 Not useful

8. General impression of the tutor

Positive 5 4 3 2 1 Negative

Comments:

EVALUATION RESULTS
from Environmental Health Course in UMB Banska Bystrica

DATE	TOPIC	LECTURER	POINTS (Average)	USEFULNESS FOR THE FUTURE (points)	COMMENTS
19/10/98	Situation in health and environment in Slovakia and the world	Slotová	29.15 83%	3.35	data from recent years missing
26/10/98	Risk assessment - environmental health	Gondová	25.35 72%	3.27	too fast, too many facts
2/11/98	Case studies	Gondová	28.35 81%	2.82	
9/11/98	Legislative aspects of environmental health	Adámek	29.88 85%	4.33	
23/11/98	Occupational health	Drímal	31.07 88%	4.28	
30/11/98	Institutional background for environmental health	Švihlová	27.00 77%	3.29	
30/11/98	Environment in the home	Adámek	30.00 85%	4.20	

Only seven of the ten lectures were evaluated by students. Session one was an introduction to the course, describing its organizational structure. Session two was a lecture giving an overview of the course and particular terminology. Session ten was the final examination and closing discussion.

Maximum points possible = 35.