



ENVIRONMENTAL HEALTH PROJECT

ACTIVITY REPORT

No. 101

An Assessment of Environmental
and Occupational Health Activities
Conducted for the
USAID Mission to Ukraine

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by
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Finally, the team is immensely grateful to all of the individuals who provided valuable interview time during the field visit. These individuals, representing a variety of agencies, NGOs, donors, municipalities, and industries, provided most of the material for this assessment and are listed in the meeting summaries provided in Appendix A.

ACRONYMS

CUNY	City University of New York
EBRD	European Bank for Reconstruction and Development
EEIC	Environmental Education and Information Center
EH	environmental health
EHP	Environmental Health Project
EIA	environmental impact assessment
ELSPAC	European Longitudinal Study of Pregnancy and Childhood
EMDU	Environmental Management Development in Ukraine
EPA	U.S. Environmental Protection Agency
EPT	Environmental Policy and Technology Project
EU	European Union
GIS	geographic information system
GOU	Government of Ukraine
HPP	Health Partnership Program
IEC	information, education and communication
IOH	Institute of Occupational Health
IPM	integrated pest management
IPOG	Institute of Pediatrics, Obstetrics and Gynecology
IR	intermediate result
ISC	Institute for Sustainable Communities
LEAP	local environmental action plan
LEHAP	local environmental health action plan
MEPNS	Ministry of Environmental Protection and Nuclear Safety (now MOE)
MOE	Ministry of Environment (formerly MEPNS)
MOH	Ministry of Health
MPP	Municipal Partnership Program
NEHAP	national environmental health action plan
NGO	nongovernmental organization
NIEHS	U.S. National Institute for Environmental Health Sciences
OHS	occupational health and safety
PAH	polyaromatic hydrocarbon
PCB	polychlorinated biphenyl
PM	particulate matter
PPMP	Pest and Pesticide Management Project
QA/QC	quality assurance/quality control
RADII	Rural Agricultural Development II
REC	Regional Environment Center
RO	reverse osmosis
SEI	State Environmental Inspectorate
SES	sanitary epidemiological service
SO	strategic objective
UIC	University of Illinois at Chicago
UN	United Nations
USAID	U.S. Agency for International Development

USCH
WHO
WWTP

Ukraine Scientific Center of Hygiene
World Health Organization
wastewater treatment plant

ug/m³

microgram per cubic meter

EXECUTIVE SUMMARY

Many of the health problems Ukrainians experience are related to environmental health (EH) and occupational health and safety (OHS). EH problems in Ukraine are often the result of antiquated industries with little or no control of air emissions and other toxic discharges to surface water or soil, and a deteriorating water and sanitation infrastructure. Most OHS problems are a result of outdated and ineffective protective equipment and procedures for workers.

These EH and OHS problems are not only creating a health burden but are contributing to the pervasive economic problems that are the focus of considerable attention in Ukraine. In the long term, attracting international industrial and private enterprise investments from corporations, development banks, and donors will require increased operational efficiency, improved worker safety, and reduced environmental and health liability.

Eliminating the causes of EH and OHS risks in Ukraine will require an expensive, long-term effort. However, numerous cost-effective measures can be taken in the short term to manage and reduce these health risks. The existence of a highly educated and committed Ukrainian environmental and occupational health professional community, Ukrainian-led National Environmental Health Action Plan (NEHAP), and an associated technical support document are critical to this effort.

The assessment of environmental and occupational health activities was designed to meet the following requirements:

- Review all EH and OHS activities conducted by Ukrainian agencies and institutions, including nongovernmental organizations (NGOs), especially at the local level; USAID; and other donors
- Identify EH/OHS links within USAID's recently approved Strategy for Ukraine, 1999-2002, and associated unmet needs for technical assistance
- Provide recommendations for USAID's potential future role in EH/OHS activities in Ukraine

Reducing the current magnitude of EH and OHS risks in Ukraine can help achieve several of USAID/Ukraine's assistance priorities. For example, the direct reduction of OHS risks along with associated reductions in environmental liability can substantially increase the long-term international investment attractiveness of Ukrainian enterprises.

Although many types of environmental activities have been conducted in Ukraine that are indirectly related to environmental health, few of these activities have focused specifically on reducing environmental or occupational diseases. To have measurable health impacts, programs must focus on identifying and managing the most important exposure pathways and health risks for the most exposed and/or most sensitive segments of the population. Prioritizing contaminants and health outcomes that are known to directly result from exposure to contaminated media (air, soil, and water) in the ambient environment will also permit more effective use of limited resources to achieve desired health outcomes.

At the local level, the State Sanitary and Epidemiological Service (SES) has the primary responsibility for inspecting enterprises and enforcing OHS norms. The employer is responsible for ensuring compliance with occupational norms and standards. SES inspectors and physicians are required to periodically survey working conditions, however, because of a reduced state budget in the last year, performance of these surveys has decreased. Only 15.8% of enterprises are complying with occupational health norms. The majority of the enterprises that are not meeting the norms are coal mining, iron-ore mining, metallurgical, and engineering industries.

Workers who receive an official diagnosis of an occupational disease are entitled to a costly compensation package that the government cannot currently afford. As a result, underreporting of occupational diseases is a common problem, which greatly concerns the Institutes for Occupational Health (IOHs). Lack of funding severely hampers the official diagnosis and reporting of occupational diseases.

Senior OHS professionals want to change the function of the IOHs from conducting academic research to the following:

- Providing training in OHS to primary care physicians (who are now the front line health resource for workers), SES inspectors, industrial workers, plant managers, and plant engineers;
- Implementing earlier problem identification and preventive actions by means of a more efficient and timely reporting system (updated, computerized occupational disease registry); and
- Conducting epidemiological research.

This new training role would not only help the IOHs become more financially sustainable, but would provide a vehicle for applying their considerable expertise in a more practical and applied manner.

The IOHs support development of an updated occupational disease registry and also a “normative document on labor protection and worker hygiene” to help them harmonize with European standards and broaden their opportunities for international collaboration. This type of legislation could be used to hold employers responsible for maintaining safe working conditions.

With improved OHS training for agencies and the private sector and subsequent site-specific improvements in health and safety procedures, statistics on absenteeism and accidents could provide very convenient measures of program success. Changes in specific occupational health risk factors identified as part of risk or hazard assessments could also be measured relatively easily by plant OHS staff. Risk factors would likely include behavioral (proper use of available protective equipment) as well as chemical (levels of air pollution in specific work zones) factors.

A skilled OHS infrastructure exists that could significantly improve OHS throughout Ukraine with updated training programs and training of trainers. Investing in training, with the extremely important addition of follow-up coaching for selected personnel in the four IOHs and key OH personnel (SES inspectors) at the oblast level and in major cities, would provide the opportunity for rapid scale up of techniques and procedures for improving OHS, even with limited resources. This training could also provide a basis for prioritizing modest investments in more modern

personal protective equipment. There are also many relatively inexpensive changes in knowledge, attitudes, and behavior that could be made as businesses and industries accomplish longer term and more expensive rehabilitation. Opportunities to improve OHS practices exist in several current USAID activities, including private enterprise, agricultural, and energy sector activities.

SES also has primary responsibility for “preventing [the] harmful impact of dangerous environmental factors and poor work conditions on human health.” EH risk factor identification and prioritization of interventions to reduce risk are critical tasks that ensure that scarce resources are applied most effectively to achieve the desired health improvements. Accurately prioritizing EH risk factors at a local level and mobilizing community risk-reduction activities require local health data, reliable analytical data for exposure pathways of concern, risk assessment tools, and knowledge and understanding of the concept of acceptable risk. Unfortunately, not only are risk assessment tools and the supporting information very limited in Ukraine, but the concept and process of prioritizing environmental interventions to improve health based on calculated estimates of relative risk is largely unknown.

The general public and health professionals have different perceptions of what constitutes major EH risk factors, but drinking water is often cited as a problem. Both public and professional perceptions are limited by incomplete or unreliable laboratory analytical data, a rudimentary knowledge of current environmental epidemiology practices within the professional community, and inexperience with the concept of both risk assessment and the notion of acceptable risk.

As demonstrated by the NEHAP, Ukrainian health professionals describe the major EH risk factors as follows:

- Air pollution probably poses the greatest health hazard at industrial locations and likely increases the local burden of chronic, non infectious diseases, especially respiratory diseases.
- Drinking water problems are mostly bacterial and are probably more widespread than air pollution problems.
- Food hygiene problems are also mostly bacterial and fecal related.
- Smoking, alcohol consumption, and nutrition are well-known risk factors that contribute significantly to poor health, but they receive little attention from the health sector.

As with OHS, a skilled and deep EH infrastructure exists within MOH in the form of SES networks that reach all urban and rural communities and supporting national institutes, such as the Ukraine Scientific Center of Hygiene (USCH). This infrastructure could significantly improve EH throughout Ukraine with updated training programs and training of trainers in risk assessment and environmental epidemiology to support implementation of the NEHAP at local levels. For industrial areas of southeast Ukraine, the environmental health study recently completed in Mariupol by U.S. Environmental Protection Agency (EPA) and University of Illinois at Chicago’s (UIC) Great Lakes Center could be used to illustrate a model approach as well as demonstrate the use European Longitudinal Study of Pregnancy and Childhood (ELSPAC) data in conducting LEHAPs. Opportunities to improve EH practices also exist in several ongoing USAID activities including LEAP, EcoLinks, the Municipal Partnership Program and the Health Partnership Program.

Summary of Key Findings and Recommendations

The following are the key findings and recommendations of this health activities assessment.

Key Findings

- A substantial and increasing list of international conventions and agreements and national policies and laws are providing momentum, a policy basis, and incentives for launching full-scale EH and OHS reforms and programs,
- Within the environmental and occupational health professional community there is a large demand for risk assessment, environmental epidemiology, and OHS training and an opportunity to influence these practices at the local level,
- Pollution in general, and drinking water in particular, often dominate public EH concerns, while local health professionals believe that respiratory problems are the most pervasive EH problem.
- There are nationwide limitations in laboratory analytical equipment, methods, and quality assurance/ quality control procedures.
- Effective strategies used internationally and in USAID programs for IEC to achieve behavior change have had very limited use in Ukraine, especially for disease prevention.
- Some local collaboration on EH issues between local agencies and institutions is already beginning to occur.

Recommendations

- Provide technical support for implementation of the LEHAPs specified in Ukraine's NEHAP and, where appropriate, integrate LEAP efforts with LEHAPs.
- Provide technical support for promoting increased productivity and reduced environmental liability through OHS training at local levels and training and equipment for development and use of an occupational disease registry.
- Train primary care physicians to take and use OH/EH histories to evaluate symptoms that may be linked to occupational or environmentally related diseases.
- Support USAID's Municipal Partnership Program (SO 2.3.1.1) by providing training and curriculum support in health risk assessment for community leaders, providing IEC for community environmental health efforts, and facilitating collaborative efforts for community health risk reduction for the four regional training centers.
- Support U.S. Peace Corps efforts to develop environmental education curricula for public schools by providing technical assistance for EH risk identification and management components for parents and children.
- Support USAID's new BizPro activity (SO 1.3) by providing an OHS training component within the training program envisioned for the Business Consultant's Association.
- Support USAID's democracy activities by introducing and including knowledge of public and private sector contaminant discharges to the environment as a specific citizen right (SO 2.1.1 – Citizen's Rights Upheld).
- Collaborate with European Union's Tacis Project and the French government in their efforts to harmonize Ukraine's laboratory analytical capabilities and procedures with EU norms and ISO 14000 standards.

Because many of the above recommendations include training, it is worth mentioning a few of the critical success factors for increasing the effectiveness and long-term impact of training programs:

- Careful audience selection to ensure that participants will be willing to train others and will be supported by their employers or organizations in future training efforts
- Initial, in-depth training that focuses on content and models desired teaching skills
- Separate training of trainers effort that focuses on process, as opposed to content
- Follow-up coaching and problem solving for trainers after they gain experience training others
- Introduction of monitoring and evaluation techniques

1 INTRODUCTION

1.1 Nature and Relationship of Environmental Health and Occupational Health and Safety

Environmental health or public health professionals historically have directed their efforts at improving community water and sanitation, vector control, sanitary solid waste disposal, and food safety. In the last 20 years, however, concern about human exposure to chemical toxins, usually of industrial origin, has increased tremendously and has become a major specialty within the field of environmental health (EH).

Occupational health and safety (OHS), although clearly related to EH, has become sufficiently specialized so that it is recognized as a different discipline both academically and practically. OHS only addresses the occupational environment and includes control of toxic gases, vapors, dusts, and fumes (industrial hygiene) and improved safety procedures to reduce physical harm in the workplace. EH and OHS do share a growing body of scientific knowledge of toxicology and epidemiology and very similar instrumentation and analytical methods. The practices of EH and OHS are significantly different, however, due to the nature of the populations affected and the feasibility of environmental controls. Table 1 illustrates some of the major differences related to toxic exposures in an occupational setting versus in the community.

Table 1 Comparison of Exposure and Effect Factors for Toxic Exposures in Occupational Settings and Community Environments

Exposure and Effect Factors	Occupational Setting	Community Environment
Population Exposed	Adults, typically healthy males	Entire population, including the very young, elderly, and ill
Exposure Time	Usually 40 hours/week, 50 weeks/year; frequently intermittent allowing the body elimination and recovery time	Varies by media: for air, exposure is continuous; nature and significance of other exposure pathways is location-specific
Exposure Levels	Usually relatively high and measurable	Generally lower than in the occupational setting and more difficult to measure
Contaminants	Often single toxicants of known origin; hazards usually identified and some protection provided	A mixture of pollutants from various sources; origins and hazards often unknown to those exposed
Effects of Concern	Specific occupational disease or illness; reduced productivity; increased costs of compensation insurance	Nonspecific respiratory impairment; increased risk of birth defects and cancer; increased susceptibility to disease; reduced well-being; long-term property and ecological damage

1.2 EH and OHS Concerns in Ukraine

According to Ukrainian health professionals and members of the environmental nongovernmental organization community, many, if not most, of the health problems Ukrainians experience are related to EH and OHS. While causal relationships between environmental or occupational conditions and specific diseases or illnesses are often difficult to precisely define or measure, it appears that many of the EH problems in Ukraine are the result of antiquated industries with little or no control of air emissions and other toxic discharges to surface water or soil and a deteriorating water and sanitation infrastructure. Toxic emissions are primarily related to several types of respiratory problems and illnesses, and poor water and sanitation facilities and behaviors are primarily responsible for gastrointestinal illnesses and occasional cholera outbreaks. Increased risks of cancer and birth defects from toxic substances are also likely. Quantifying and prioritizing cancer and other toxic risks, however, require the ability to measure small amounts of toxic substances in the environment to estimate the doses that children and adults may be receiving. Currently, Ukraine lacks the equipment, quality control procedures, and ultra clean laboratory practices to accurately measure levels of environmental contamination.

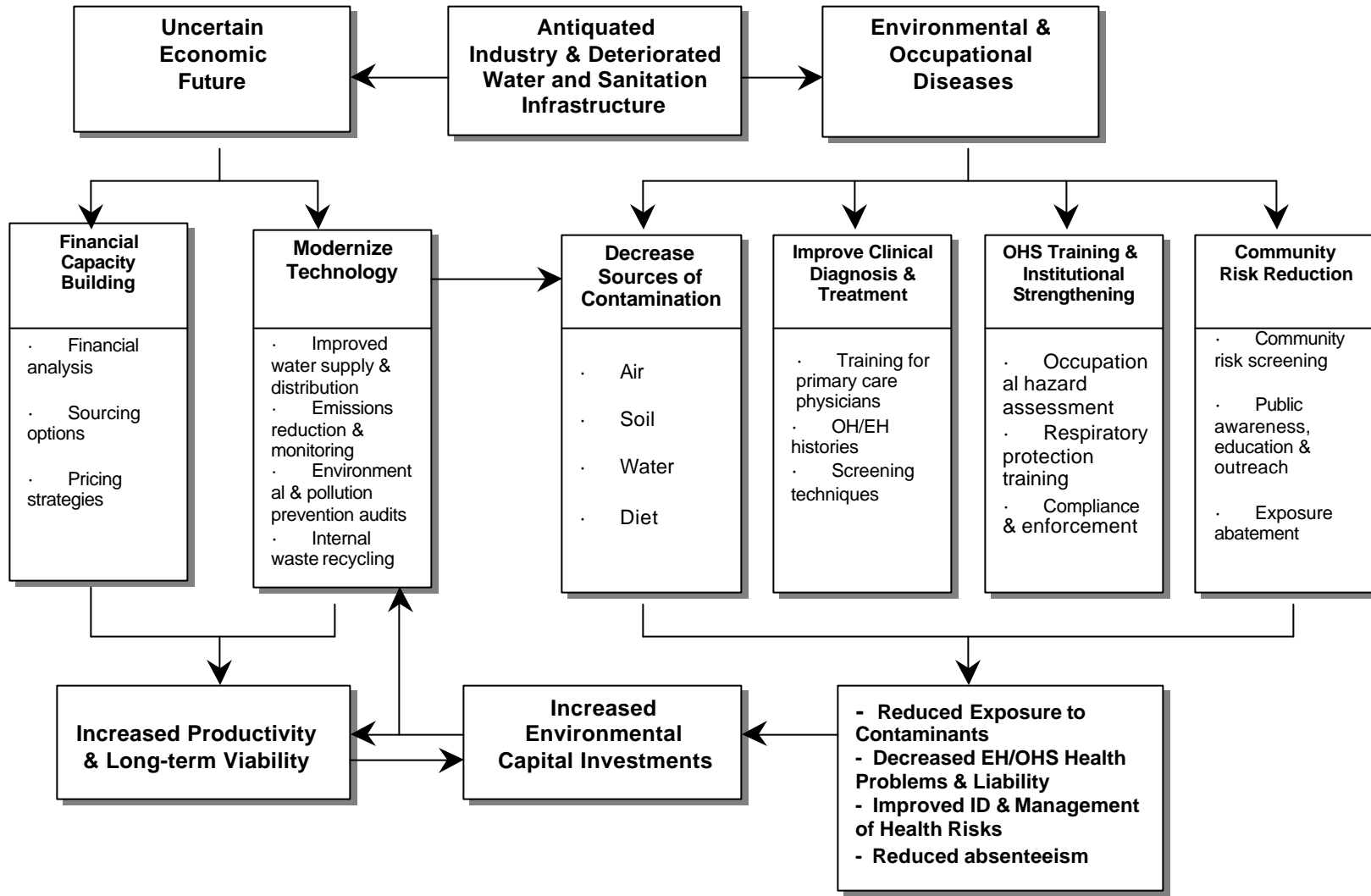
Most OHS problems are a result of outdated and ineffective protective equipment and procedures for workers. More recently, there has been a near collapse of the Soviet-era system of monitoring and treating workers for occupational diseases, due to a lack of resources within the OHS infrastructure. As a result, occupational diseases are now likely to be encountered by primary care physicians with little or no training in this field.

These EH and OHS problems are not only creating a health burden but are contributing to the pervasive economic problems that are the focus of considerable attention in Ukraine. In the long term, attracting international industrial and private enterprise investments from corporations, development banks, and donors will require increased operational efficiency, improved worker safety, and reduced environmental and health liability. Figure 1 is a general illustration of how a variety of technical assistance efforts could work together to improve EH and OHS and encourage more capital investments.

Despite the extent of EH and OHS problems in Ukraine, there are three important bright spots. First is the historic (pre-Soviet) and publicly respected tradition of public health in Ukraine, as evidenced by how positively the public regards Ukraine's local Sanitary Epidemiological Service (SES) public health doctors and environmental and occupational health professionals. The second is a highly educated and very committed environmental and occupational health professional community. The third is the recent, Ukrainian-led development of a National Environmental Health Action Plan (NEHAP) and an associated technical support document. NEHAP is close to being approved by the Cabinet of Ministers and will be followed by Local Environmental Health Action Plans (LEHAPs).

Eliminating the causes of EH and OHS risks in Ukraine will require an expensive, long term effort. However, numerous cost-effective measures can be taken in the short term to manage and reduce existing health risks. Many risk management measures that focus on maximizing the use of existing Ukrainian resources are described in this report. As illustrated in Figure 1, the three vertical boxes on the right side illustrate general topics for EH and OHS institutional capacity building and training. The three vertical boxes on the left illustrate needed technical assistance to the private industrial sector.

Figure 1
Potential Technical Assistance Responses to Environmental and Occupational Health Problems in Ukraine



1.3 Purpose of Assessment

Recently the USAID/Ukraine Mission developed a strategy for assistance to Ukraine for the next three years. Several of the strategic objectives (SOs), including environment, health, municipal strengthening, private enterprise, and democracy, have intermediate results (IRs) with strong links to EH and OHS. This environmental and occupational health activities assessment has the following purpose:

- Review all EH and OHS activities conducted by Ukrainian agencies and institutions, including NGOs, especially at the local level; USAID; and other donors
- Identify EH/OHS links within USAID's recently approved Strategy for Ukraine, 1999-2002, and associated unmet needs for technical assistance
- Provide recommendations for USAID's potential future role in EH/OHS activities in Ukraine

1.4 Methods

The primary methods used to accomplish the assessment included the following

- Review of selected documents related to EH/OHS concerns and activities in Ukraine as noted in the references in Section 8.0
- Pretrip discussions with personnel from the University of Illinois at Chicago School of Public Health and the U.S. Environmental Protection Agency (EPA) who have been working on a joint U.S.-Ukraine environmental health project in Mariopol and Kiev
- Discussions with USAID/Ukraine staff regarding their perceptions of potential links between activities that are or will be conducted under the current strategy
- Extensive field interviews with Ukrainian health and environment professionals in a variety of agencies and institutions at the national level and at the oblast level in Cherkassy and Dniprozerzhinsk
- Meetings and discussions with other donors from Europe and Canada and with the World Bank

A summary of interviews and meetings conducted during the field visit is provided in Appendix A, Meeting Summaries.

1.5 Constraints/Limitations

The following constraints and limitations need to be kept in mind when reviewing this assessment.

Time Available

Although the Environmental Health Project (EHP) team is confident that this assessment provides a credible overview of the major EH and OHS activities, stakeholders, and perceptions in Ukraine, the time available was very short: a few days for reviewing documents prior to the

field visit and a two-week field visit that included many interviews in Kiev as well as interviews in Cherkassy (a rural oblast) and Dnipropetrovsk (an industrial oblast). Because EH and OHS are broad, cross-sector disciplines that can potentially be influenced by many agencies and institutions, including NGOs and community groups, the short time available for this assessment required the team to focus on the aspects of EH and OHS that appeared to be of most concern to Ukrainian health professionals and USAID.

Focus on Activities and Perceptions Rather Than Data Evaluation

A substantial amount of information and data have been put forward by various individuals, groups, and agencies, both inside and outside of Ukraine, regarding EH and OHS issues in Ukraine. In assessing activities related to EH and OHS and identifying the most effective next steps at local levels, there was a temptation to attempt to prioritize specific environmental or occupational risk factors or health problems. However, determining specific priorities requires evaluating the quality and reliability of existing information and data. Although the team did provide some comments in this assessment regarding the quality and reliability of available data and information, as did the Ukrainian professionals interviewed, actual data evaluation was not the purpose of this assessment and, therefore, limited the team's ability to identify specific health priorities at specific locations.

2 USAID/Ukraine SOs and IRs Related to Environmental and Occupational Health

According to the most recent U.S. Assistance Strategy for Ukraine, 1999-2002 (version obtained on 11/5/99), assistance priorities for the next four years are intended to help Ukraine

- **“promote economic growth** by setting in place an environment conducive to investment, facilitating job creation, transforming important sectors of the economy, and easing the pain of the transition;
- **consolidate the institutions of a functional democracy** through civil society and a society based on the rule of law; and
- **improve the quality of life** for Ukrainians by addressing, for example, reform in health care delivery.”

Reducing the current magnitude of EH and OHS risks in Ukraine has a role in achieving each of these priorities, as demonstrated by the following examples.

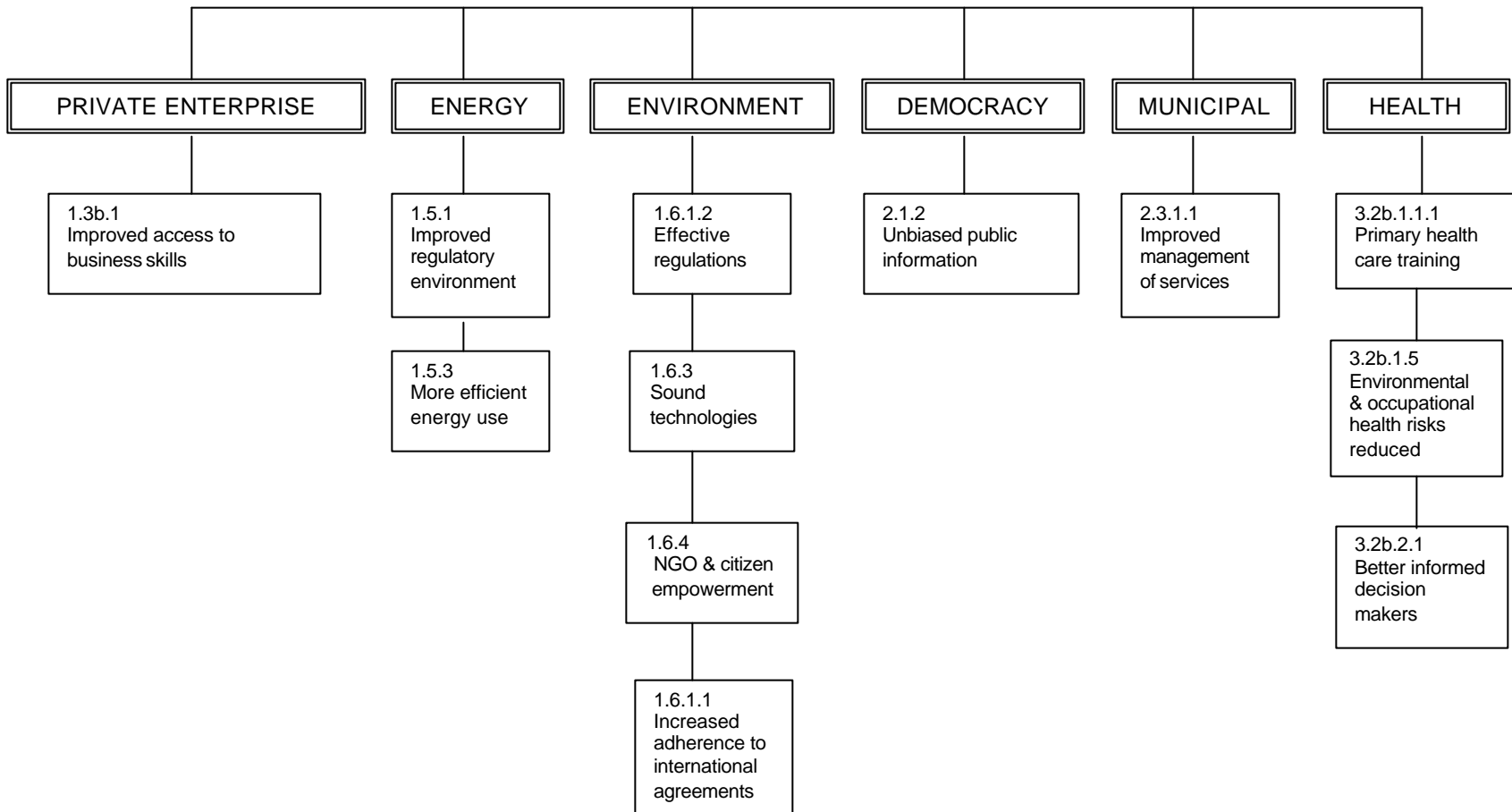
- The direct reduction of OHS risks (improvement of OHS) along with associated reductions in environmental liability (emissions control) can substantially increase the long-term international investment attractiveness of Ukrainian enterprises.
- Lifting the previous secrecy regarding industrial contaminant discharges to the ambient environment and providing local governments and citizen groups with more environmental health information, along with the skills to evaluate that information and take part in local risk reduction initiatives, has become fundamental to modern functional democracies.
- Current EH and OHS risks currently affect the quality of life for nearly every citizen in Ukraine.

Figure 2 illustrates the specific IRs in USAID/Ukraine’s current strategy that have EH and OHS links. SO 3.2(b).1.5, Environmental and Occupational Health Risks Reduced, is the most specific SO solely dedicated to improving EH and OHS. EH and OHS, however, are, by definition, cross-sector in that reducing these risks requires working outside the health sector with the sectors that can address the sources of risk. Reducing EH and OHS risks also has many benefits related to other SOs and, therefore, is most effectively accomplished through cross-sector efforts and a community-based participatory approach. The nature of the links to other SOs is described briefly below:

SO 1.3 Development & Growth of Private Enterprise 1.3(b).1 Improved Access to Market-Driven Business Skills and Information

The ability to manage OHS and conduct environmental impact assessments (EIAs) for private sector companies is a fundamental business skill for any company that operates within a regulated environment. Through the Citizen’s Network, USAID/Ukraine has fostered development of some excellent, though currently limited, local capacity in conducting EIAs for the private sector, which address both OHS and potential environmental liability. Although this

Figure 2
USAID/Ukraine Intermediate Results with Environmental and Occupational Health Links



effort was initiated in response to the need to fulfill U.S. regulations for small agricultural businesses utilizing USAID funds, the skills required to conduct these EIAs are applicable to other types of businesses. This effort will be continued through USAID's Rural Agricultural Development II (RADII) project, but there are currently no plans to expand EIA capabilities.

USAID has also sponsored, through EPA, previous EIA training through Ukraine's Ministry of Environment (MOE) and the Donetsk oblast MOE representatives. Expertise developed through the Citizen's Network/RADII and the previous EPA programs could be utilized to benefit the new BizPro activity currently in the design phase under IR 1.3(b).1. Those designing the BizPro activity have recognized the need for businesses and environmental consultants to be able to conduct EIAs that also include OHS. The BizPro activity will likely, therefore, include training for these types of assessments. Utilizing previous USAID-developed capacity for these assessments in the development and implementation of these training programs would not only benefit the BizPro activity, it would also be a good follow up to USAID's previous EIA activities.

SO 1.5 More Economically Sustainable and Environmentally Sound Energy Sector

1.5.1 Improved Regulatory Environment for the Energy Sector

1.5.3 More Efficient and Reliable Utilization of Energy

USAID efforts in the energy sector have, in part, focused on regulatory reform and increased efficiency. The primary link to EH is the fact that the energy sector is currently responsible for most of the air pollution in Ukraine. The technical support document for the NEHAP cites industry as being responsible for 65% of the air pollution in Ukraine and "heat and power engineering enterprises" as being responsible for 33% of all pollutants emitted to the atmosphere. Metallurgical industries contribute 25% and the coal industry contributes 23%. Furthermore, the technical support document provides considerable evidence to support the conclusion that air pollution likely constitutes the greatest single human environmental health hazard in Ukraine today. Thus, USAID efforts in the energy sector to promote the conduct and regulatory use of EIAs, to increase efficiency and thereby reduce emissions, and to use cleaner fuels will likely have a positive health impact. The link between energy sector efforts and improved health is not discussed in the current U.S. Assistance Strategy for Ukraine. Emphasizing this link both conceptually and programmatically could add further support to energy sector reform activities.

SO 1.6 Environmental Management for Sustained Economic Growth

1.6.1.1 Increased Adherence of GOU to International Environment Treaties

1.6.1.2 More Internationally Consistent, Cost-Effective, and Locally Effective
Environmental Regulations

1.6.3 Improved Environmental Management Practices and Adoption of
Environmentally Sound Technologies

1.6.4 Increased Empowerment of NGOs and Citizens to Affect Environmental Decision
Making

The discussion of SO 1.6 in the U.S. Assistance Strategy for Ukraine cites seven environmental constraints to economic development in Ukraine. Several of these constraints could be mitigated

by improvements in EH and OHS. Some of the constraints identified include the need for improved environmental management to increase productivity and make businesses more attractive to private investors, which is also strongly linked to improved OHS and reduced emissions (environmental liability) to attract international investors; the need for increased public awareness and understanding so that local authorities, citizens, and businesses can take modest steps at the local level to reduce harmful emissions and increase efficiency, even with limited budgets; and the need for increased access to environmental information to enable increased public awareness, innovative financing, and voluntary risk reduction measures.

Ukraine is signatory to more than 100 international treaties, protocols, and agreements, and more than 26 of these have EH and OHS components. Under IRs 1.6.1.1 and 1.6.1.2, USAID and UNDP are collaborating to support Work Groups to propose legislative and policy reforms that will support Ukraine's ability to comply with these international agreements and reduce barriers to sustainable development. Many of the legislative and policy reforms were identified based on USAID-supported field demonstration projects in urban water, agriculture, industry, energy efficiency, and environmentally sound business development. SO 1.6.1.2 includes environmental assessments, described above as related to SO 1.3.

While a rationale for achievement of IR 1.6.3 can be made on economic grounds, adding improvements in environmental health (reductions in environmentally related diseases) to that rationale can further strengthen support for achieving this IR. Measuring reductions in health risk factors (e.g., air and water quality parameters known to be linked to specific diseases or illnesses) can be important indicators for improved health. A rationale and approach for the achievement of IR 1.6.4 is the subject of much of this assessment.

A new USAID activity to support IRs 1.6.3 and 1.6.4 will begin soon with a focus on local, community-based environmental initiatives. These local initiatives will be known as Local Environmental Action Plans (LEAPs) and could have very important connections to the Ukrainian LEHAPs in some locations. While LEHAPs will focus specifically on EH issues and potentially occur in every oblast, LEAPs are anticipated to cover a range of both green and brown environmental issues* and occur only at selected locations. In locations where LEAPs focus on brown environmental issues, there is likely to be a connection to environmental health and some important opportunities to link the LEAP and LEHAP efforts.

SO 2.1 Increased Better Informed Citizen Participation in Political and Economic Processes

2.1.2 More Unbiased Public Information Available to Citizens

Achievement of publicly available information about public and private sector contaminant discharges to the environment, as described in the "community right-to-know," or public release and transport (PRTR), agreements from the 1998 Aarhus Conference (see Section 3.1 of this assessment), is a perfect example of the type of unbiased public information that is needed to support citizen participation in local, democratic decision-making processes pertaining to reducing environmental health risks.

* *Green* environmental issues include protection of wildlife habitat, protection of biodiversity, and similar topics. *Brown* environmental issues include hazardous waste, water and air pollution, and the like.

SO 2.3 Effective Local Government

2.3.1.1 Improved Management of Municipal Services

Environmental health services, such as water and sanitation, solid waste disposal, and protection from local sources of environmental contamination, often involve local governments in either a stakeholder role or a direct management role. In addition, these types of services are often a high priority for citizens, as USAID/Ukraine has discovered in the Municipal Partnership Program.

SO 3.2(b) Improved Health Care Service Delivery

3.2(b).1.1.1 Primary Health Care Personnel Better Trained

3.2(b).1.5 Environmental and Occupational Health Risks Reduced

3.2(b).2.1 Better Informed Decision Makers

The Soviet-era OHS system was very well developed and self-contained with a cadre of occupational health physicians that worked within all the major industries and a regional system of occupational disease clinics. Currently, however, because of budget cuts within the occupational health care system in Ukraine, primary health care doctors, rather than occupational health doctors, are often the first contact with the medical system for individuals with occupational diseases and for individuals with environmentally related illnesses or diseases. Primary care doctors in Ukraine are not trained to take or effectively use environmental and occupational health histories in either treating or referring patients, a skill which would support IR 3.2(b).1.1.1 activities.

A rationale and approach for the achievement of IR 3.2(b).1.5 is clearly the subject of much of this assessment. Key skills that need to be developed include a better understanding of environmental pathogen and contaminant exposure pathways, accurate identification of human health risk factors at specific locations, and quantitative risk assessment techniques.

Achieving IR 3.2(b).2.1 is linked to improvement in environmental epidemiology skills and practices within Ukraine's health professional community so that decision makers can better understand the nature and magnitude of the various potential environmental health problems facing Ukraine.

3 Policy Bases and Incentives for Environmental Health Programs

A substantial and increasing number of international conventions and agreements and national policies and laws are providing momentum and a policy basis for launching full-scale environmental and occupational health programs. A few of the most pertinent international and national incentives are discussed below.

3.1 International

Ukraine is a party to more than 26 international environmental conventions, agreements, and protocols. Most of these are through the MOE, but many are directly or indirectly related to environmental health. Because the MOE does not directly address human health issues, collaboration between MOE and MOH will be necessary to, at a minimum, identify how environmental activities can best achieve the specific health risk reduction implied by some of these agreements. For example, health professionals may be most able to identify which environmental pathogens or contaminants pose the greatest health risk and, therefore, need to be prioritized for control.

The specific international conventions that arose most often in discussions about environmental health included the UN-sponsored Fourth Pan European Environment Ministers Conference in Aarhus, Denmark, in June 1998, and the World Health Organization (WHO)-sponsored Environment and Health Ministerial Conference in London in June 1999. One of the key items from the agreement signed at the Aarhus convention addresses community “right-to-know” issues regarding private or public sector pollutant discharges to the ambient environment. This agreement is important for several reasons. First, in order to be most effective, environmental NGOs and the community at large need this kind of information to prioritize industries, locations, or processes posing the greatest human health risks and, therefore, needing the most immediate public attention. Second, both private and public sector entities that discharge pollutants to the environment need this kind of information to enable them to reduce their emissions to acceptable levels. Third, both primary care and occupational health professionals need this information to make comparisons with local health data for individuals likely exposed to these pollutants. Fourth, and perhaps most important, the agreement establishes the concept that access to this type of information is a “right” similar to other democratic rights.

The 2002 Environment Ministers Conference, a follow-up to Aarhus 1998, Sofia 1995, Lucerne 1993, and Dobris 1991, will be held in Kiev. This event, clearly a source of pride to many environment and health professionals in Ukraine, will no doubt also provide additional incentives for Ukraine to take concrete actions related to current international environmental health agreements.

At the June 1999 London Environment and Health Ministerial Conference, Ukraine, along with 35 other countries in the region, signed a Water and Health Protocol. Signatories, who include Ukraine's Deputy Minister of Environment, Anatoly Yatsyk, agree to meet the following five provisions:

- A quality drinking water supply
- Sanitary and prophylactic measures against water pollution
- Protection of water resources
- Measures on health protection from hazards associated with water
- Monitoring of water quality

Although this protocol is clearly important for reducing waterborne disease transmission, no one interviewed by the EHP team knew whether attainment of specific water quality standards was incorporated into the protocol. This protocol clearly supports Ukraine's recently developed NEHAP presented at the 1999 London Conference and discussed below in Section 3.2.

Finally, other internationally agreed-upon standards, such as EU health-related norms for water, soil, and air; ISO 14000 analytical standards; and quality assurance/ quality control (QA/QC) procedures linked to EU admission, are providing the incentive for Ukraine to update laboratory analytical capabilities. The French government is supporting this effort with the State Certification and Metrology Center and the EU, through the Tacis Project, a broad technical assistance project, and is working with selected MOE laboratories. The costs associated with the needed equipment and procedural upgrades is quite significant. As discussed in the following sections, however, the benefits of improved equipment and analytical procedures are numerous, such as providing a sound technical basis for prioritizing health risk factors, and will likely produce cost savings in the long term.

3.2 National

There is no shortage of policies, laws, standards, or resolutions related to environmental health in Ukraine. Health-related standards for all media (air, drinking water, and soil) have been adopted, and on June 22, 1999, the Cabinet of Ministers passed a resolution "*On Approval of Regulation on State Sanitary and Epidemiological Surveillance in Ukraine*" to ensure the sanitary and epidemiological welfare of the population. This resolution details the roles and responsibilities of the state SES, Ukraine's primary agency for addressing OHS and EH. This agency's mandate includes most aspects of EH and OHS, from standard setting and environmental monitoring and inspections to enforcement authority.

The single most important document, however, is Ukraine's recently developed NEHAP, currently on the third, and final, cycle of signings with the Cabinet of Ministries. Ukrainian health and environmental professionals familiar with the NEHAP and the legislative process believe that the NEHAP will be approved as a resolution. Resolutions are under the authority of the Cabinet of Ministries and are considered a more expedient method for enacting policy and regulatory reform than the normal legislative process.

NEHAP, and an associated technical support document, identify and describe the nature of environmental health problems in Ukraine by media (air, water, food, soil) and by sector (housing, energy, industry, agriculture, transport.). NEHAP provides for regional and local environmental health plans to be produced by local administrators, health professionals, and sector representatives in conjunction with NGOs. WHO supported development of NEHAP, and the Ukrainian Scientific Center of Hygiene (USCH) provided the technical basis by leading a diverse team of scientific stakeholders in the preparation of “Environment and Health of the Ukrainian Population: Report to the Environmental Health Action Plan.” Dr. Olga Timchenko of USCH led this effort and helped prepare NEHAP through a collaborative effort that included SES, the Ministry of Environmental Protection and Nuclear Safety (MEPNS), NGOs, and input from most of the oblasts. USAID provided support for MOE participation in preparation of both the technical support document and NEHAP. MAMA 86, a national NGO, held five regional workshops to obtain local input. USCH is considered the most informed and strongest advocate for NEHAP in Kiev.

4 Previous Activities Related to Environmental or Occupational Health

Although many types of environmental activities have been conducted in Ukraine that are indirectly related to environmental health, few of these activities have focused specifically on reducing environmental or occupational diseases. This section provides an overview of some of the activities conducted by USAID and others that have focused on various topics related to environmental health, including contaminant source reduction, risk assessment, and environmental education. No previous activities for OHS were identified.

Each of the contaminant source reduction programs mentioned here assumed that the program would result in a health benefit. While the scopes of work for these types of activities often identify improving human health as a goal, in actuality, the projects provide equipment, technical assistance, and training to prevent or control sources of pollution, but seldom attempt to identify specific health impacts, much less measure them. Projects that measure reductions in pollutant loads could, theoretically, calculate corresponding reductions in health risks; however, risk assessment expertise is very limited in Ukraine.

To have measurable health impacts, programs must focus on identifying and managing the most important exposure pathways and health risks for the most exposed and/or most sensitive segments of the population. Prioritizing contaminants and health outcomes that are known to directly result from exposure to contaminated media (air, soil, and water) in the ambient environment will also permit more effective use of limited resources to achieve desired health outcomes.

4.1 USAID Activities

Several USAID activities have included contaminant source reduction, risk assessment, and environmental education.

4.1.1 Contaminant Source Reduction

USAID has sponsored several projects aimed at reducing contaminants, either at the source or at point of use. These include the Donetsk Industrial Waste Minimization Activity, the Kaniv Reservoir Water Quality and Abatement Project, the Lviv Urban Water Management Demonstration Project, the Pest and Pesticide Management Project, the E-SO_x and Reburn Technology Demonstration Project, and the City University of New York (CUNY) Water Point-of-Use Disinfection Project. In addition, USAID is assisting the energy sector in improving the efficiency of its operations, which usually results in emission reductions.

Donetsk Demonstration of Environmental Management of Industrial Waste and Industrial Waste Minimization

To address industrial waste in the Donetsk region, USAID funded EPA to conduct the Donetsk Demonstration of Environmental Management of Industrial Waste and Industrial Waste Minimization activity. The purpose of this activity was to undertake a demonstration project to promote more effective control of industrial contaminant releases into the environment and to establish a foundation for a waste management program that could be undertaken by the Donetsk oblast office of the MEPNS. The project included implementation of industrial pollution control assessment and audits and training of enterprise personnel in the auditing process; improving the capacity of the MEPNS to better manage the generation, storage, and disposal of hazardous waste; and the provision of a resident industrial waste specialist to provide advice to the Donetsk MEPNS. The activity was effective in identifying opportunities to demonstrate waste minimization techniques. The lack of modern analytical equipment to undertake pollutant monitoring that could serve as a basis for legal prosecution, the unwillingness of local regulators to enforce fines for noncompliance, and the limited funds for implementation of waste-minimization implementation hindered the effectiveness of the audits.

Kaniv Reservoir Water Quality and Abatement Project

USAID, EPA, and MEPNS developed the Kaniv Reservoir Water Quality and Abatement Project to assess reservoir water quality issues and to introduce improved pollution abatement and management strategies. Project components included the following:

- Compilation of existing Kaniv Reservoir data
- Provision of laboratory and sample collection equipment
- Training of Ukrainian laboratory specialists
- Implementation of a 1995 Kaniv Reservoir Water Quality Study
- Development of a water quality information database
- Development of a Kaniv Reservoir water quality and quantity model
- Improvement of wastewater treatment plant inspection techniques
- Development and implementation of management strategies, using the model to make decisions affecting water quality improvement in the reservoir
- Replication of the project at other Dnipro Basin reservoirs

Partnering EPA/Region 4 with MEPNS staff (with support from a U.S. contractor) resulted in several effective outcomes. Laboratory equipment was provided to Ukrainian MEPNS staff who worked with EPA to develop six water quality studies in 1995-1996. Data from the studies were used for water quality model calibration and completing a database on the reservoir's environmental conditions. Data from the model were used to develop a Kaniv Reservoir Restoration Management Plan, which has allowed those who manage the flow regime to estimate how their decisions will affect water quality in the reservoir. An associated Dnipro River public awareness and participation activity strengthened coordination and communication among organizations addressing environmental problems along the river and promoted increased public awareness of these environmental problems.

After successful completion of the Kaniv Reservoir Project on the Dnipro River, a similar study and modeling effort was completed in the Dnipro-Boog Estuary. The estuary study has enabled regional branches of the MEPNS in the Kherson and Mykolaiv oblasts to make informed

decisions when threatening conditions develop. The Dnipro-Boog Estuary is the largest of all the Black Sea estuaries. Maintaining an optimal flow from the Kakhovka Reservoir into the lower stretches of the Dnipro delta and estuary is crucial. If this regime is violated, a salt wedge of water is likely to go up the Dnipro River to Kherson, posing a threat to irrigation, drinking, and industrial water supplies. In addition, if sufficient flow through the Dnipro-Boog Estuary is not maintained, heavy metals and other toxic substances will mobilize from the bottom sediment and move with the salt wedge to drinking water withdrawal points as well as into the wetlands ecosystem. Thus, development of the water quality model was very effective in helping the local branch of the MEPNS to make informed decisions while managing flow rates. MEPNS officials report that they still use the models developed, but that some turnover of staff has occurred. Although this activity was very successful, it may have been more effective if the water-quality model building tool had been shared with local engineering universities such as the Chercassy Polytechnical Institute, or other institutes that are cultivating researchers under recently introduced environmental engineering curriculum. Reportedly, the laboratory equipment provided under the Kaniv project is being housed at the Institute of Inorganics and Water Chemistry, which is part of the Academy of Science.

Lviv Water Service Improvement

In the Pasichna district of Lviv, located in western Ukraine, USAID conducted an Urban Water Program that developed local capacity to increase water service from 0 to 3 hours to 24 hours per day for the population of 35,000. Activities included transfer of EPA computerized water system modeling technology, U.S. engineering technologies, and efficiency and financial management techniques. Specific upgrades included calculations of payback costs when considering installation of more energy-efficient equipment, actual installation of energy-efficient pumps, and operation of this subsystem on a quasi-independent basis to better manage the delivery of water to local residents. In addition to the results in the Pasichna district, installation of energy-efficient pumps in nearby pump stations has enabled improved water services for approximately 200,000 residents in other neighborhoods.

Human resource development has also been included in this program. The Design Institute in Lviv, under the State Committee for Construction, Architecture, and Housing, has received technical and financial training to take on a semi-private consulting role in the Lviv Urban Water Program and in subsequent roll-out activities in other municipalities. Community participation in the program has also been supported by USAID through training of trainers to facilitate public involvement and improve municipal capacity to understand and address public concerns.

An important public concern that has not been adequately addressed, however, is the quality of the water and its effect on health. In an attempt to address this concern, the Institute of Toxicology laboratory in Kiev and a U.S. laboratory analyzed identical water samples from Lviv. Reportedly, the Institute of Toxicology found that drinking water in Lviv exceeded standards for mercury and another heavy metal. The U.S. laboratory analysis, however, indicated that the drinking water did not contain detectable quantities of metals, pesticides, or any other toxic substances. The EHP team was unable to acquire any written information regarding water quality in Lviv or health effects of concern to the public.

Finally, a financial analysis of the vodokanal was prepared to provide information to the World Bank for review of the utility's application for a \$44 million capital improvement loan. Negotiations between the Bank and Ukraine's credit council are proceeding slowly.

USAID will continue to provide technical assistance and training to roll out the Lviv Urban Water Program to six to eight other municipalities in Ukraine. Training will include sustainable environmental management, energy-efficient improvements, improved financial management, and water system weaknesses identification. Major infrastructure upgrades, however, will be dependent on capital improvement loans from the World Bank or other sources. In addition, citizens' concerns about water quality and health should be addressed directly, as described in Section 6.2.3 of this assessment.

Pest and Pesticide Management Project

The decrease in state-run farming operations has led to a dramatic increase in the number of small, home-based commercial growing operations. As a result, pesticide use by the general public has increased considerably. Estimates of the health hazards posed by this situation are dependent on estimates of the type and magnitude of pesticide exposures. With increased use of pesticides in a household environment, however, one of the major concerns would be increased exposure to children. Their smaller body size means that they receive a greater dose of pesticides (amount of exposure per kilogram of body weight) than adults in the same environment. In addition, children are often more sensitive to pesticides due to their developmental stage.

The Pest and Pesticide Management Project (PPMP) is a U.S./Ukraine collaborative project initiated by USAID to increase the productivity and safety of agriculture through integrated pest management (IPM) practices; proper handling, transport, and use of agro-chemicals; and demonstration and transfer of pesticide registration management techniques, regulatory approaches, and risk-reduction techniques. Important components of the project related to environmental health included a training of trainers program for three oblast IPM and pesticide safety training teams in Dnipropetrovsk, Lviv, and Odessa. This program provided a training module on pesticides and human health and in-country seminars on specialized topics in the review of scientific data for pesticide registration, including toxicology, child health, ecotoxicology, and pesticides and groundwater. In addition, outreach education was offered and public awareness material distributed to inform the public about pesticide risks and safety precautions. Apparently, there was no baseline investigation to evaluate risks to local farmers, which makes it difficult to evaluate the impact of the project.

Under PPMP, local NGOs were very effective in publicizing information on pesticide use safety and health. As a follow-up to the training of trainers program, one local NGO trained over 700 individuals with outreach to several additional oblasts. New training materials on safe use of pesticides and health risks were developed and distributed. Four other NGOs produced and disseminated videos on television and printed materials, which addressed safe use and handling of pesticides, pesticide contamination of food and the environment, and alternatives to pesticide use.

A recent PPMP progress review forum highlighted several issues and needs related to environmental health:

- Few household producers (growers) have inadequate information available to them for safely using pesticides on their plots.
- A general lack of awareness concerning pesticide safety exists.
- There is a lack of resources for modern pesticide application equipment and protective gear.
- There is a need to reinforce and expand the oblast training of trainers program on pesticides and human health to include a wide range of health, environmental safety, and agricultural production practices.

Current efforts are focused on how to make plant protection stations (one exists in each oblast) more effective in addressing these issues in communities. The PPMP is scheduled to end in April 2000. Unfortunately, there has been no monitoring or evaluation component to evaluate the community impacts of the program, for example, its impact on knowledge, attitudes, and practices regarding pesticide selection and use.

E-SOx and Reburn Technology Demonstration Project

From 1992 through 1997, EPA, with funding from U.S. Technologies for International Environmental Solutions and USAID, worked with the All-Russian Heat Engineering Institute, Ukrainian Ministry of Power and Electrification, Vinitaergo, and Lviv Orgres to demonstrate E-SOx and reburn technologies at selected sites in Russia and Ukraine. The objectives of the E-SOx project were to reduce SO₂ emissions by at least 50% from a typical coal-fired or municipal waste-fired power plant in Ukraine by application of a low-cost technology suitable for retrofit on an industrywide basis, and to upgrade and improve electrostatic precipitators to meet their full potential in fine particulate matter control and apply this technology for retrofits on an industrywide basis. The objective of the reburn technology was to demonstrate reduction in NO_x emissions on wet-bottom design power generation boilers in Ukraine and demonstrate the capability of reburn technology to be applied to natural gas, coal, or oil-burning power-generation operations. The E-SOx and reburn technologies were successfully demonstrated in Ukraine. EPA completed a natural gas-fired reburn system on the Ladyzhin No. 4 boiler. Administrators at the Ladyzhin Power Station were so pleased with the system that they decided to use the reburn system permanently.

CUNY Point-of-Use Disinfection System

Intermittent water supply and deteriorating water distribution systems in Kiev, led CUNY to submit a proposal requesting that USAID provide matching funds to CUNY to develop and implement a small-scale ozone water disinfection system at a Kiev hospital. With local design institute counterparts, CUNY experts successfully designed and installed a point-of-use small-scale ozone water disinfection system in the medical facility. Although no environmental health impact from this activity was measured, the provision of a source of reliably clean water to the hospital was presumably effective in reducing bacterial loads, which often contaminate water distribution networks between the water treatment plants and points of use. Last year, 40 additional small water treatment units were provided by USAID to partner hospitals in Odessa, Kiev, and Lviv.

4.1.2 Risk Assessment

Moldova

USAID has supported risk assessment activities in Moldova through the Environmental Policy and Technology Project (EPT) and in Donetsk through EPA. An overview of the Moldova activity, entitled “Environmental Health Risk: Priority Setting and Training,” is described under Task M1 for Moldova in the Final Report for Delivery Order No. 9. This activity included several important elements: an intensive, multiday training for a cross-sectoral group of environmental, health, and management professionals; a study tour for Moldovan leaders that led to the establishment of a new office for the Environmental Communications and Public Information and Steering Committee within the Department of Environmental Protection to oversee multisectoral environmental health risk assessments; translation and wide distribution of risk assessment methods; and laboratory analytical equipment and training. The primary limitation identified for this activity was the lack of an actual application of risk assessment techniques at a demonstration site. As discussed at the end of Chapter 7 (Summary of Findings and Recommendations), for training to be most effective and have a long-term impact, several critical factors are necessary in implementing the training and conducting follow-up.

Donetsk

EPA activities begun in Donetsk in 1995 included risk assessment training, collection and evaluation of environmental data, and development of an environmental action plan. The EHP team did not receive any final reports from this activity, but it is likely that trained local personnel are still working in Donetsk and could be tapped for future risk assessment training efforts.

Mariupol and Kiev

A recently completed joint U.S./Ukraine research study, conducted in Mariupol and Kiev, entitled *Environmental Pollutants and Health Status of Children*, provides a comprehensive model for collecting, analyzing, and assessing local environmental data and combining this information with health data to evaluate environmental health risks to children. In Mariupol, two steel plants and an associated coking facility are responsible for over 99% of stationary air emissions.

The study included three phases: environmental assessment, health assessment, and risk assessment. The exposure pathway that was found to pose the most significant health risk was inhalation of ambient air in Mariupol. Ambient air in Mariupol is contaminated with chromium, polyaromatic hydrocarbons (PAHs), and particulate matter (PM). The lifetime cancer risk due to inhalation of metals and PAHs ranged as high as one excess cancer case/10,000 people. The inhaled PM_{2.5} average of 23.2 ug/m³ was higher than the U.S. standard of 15 ug/m³, which increases the risk of respiratory irritation and exacerbation of respiratory disease. Consumption of locally caught fish was also an exposure pathway of concern, with a lifetime cancer risk of one excess cancer case/10,000 people. The two major fish contaminants are polychlorinated biphenyls (PCBs) and DDT.

4.1.3 Environmental Education

Moldova

In addition to risk assessment, EPT activities in Moldova included an educational outreach campaign for environmental awareness and consensus building. This activity included development of university-level materials on environmental health risk assessment and risk management and their introduction in the curricula of six Moldovan universities.

Ukraine

Beginning in 1995, USAID supported EPA, in collaboration with Ukraine's MOE and in joint management with the Institute for Sustainable Communities (ISC), to implement a public awareness and participation activity to inform and educate Ukrainian citizens about environmental problems in Ukraine, what is being done to address these problems, and how citizens can assist in these efforts. The program included a national television and media strategy; public awareness campaigns for three specific environmental issues: Dnipro River pollution, industrial pollution in Donetsk, and biodiversity in Ukraine; and development of an Environmental Education and Information Center (EEIC) in Kiev. The goals of this center were to introduce modern methods of environmental education and information resource management to MOE and local universities, disseminate environmental education activities throughout Ukraine, and promote exchange of environmental education information through electronic mail and a library. The EEIC was disbanded in 1998, but some of its functions will likely be continued by a new Regional Environment Center (REC) office that will open soon in Kiev.

Ivano-Frankivsk and Chmelnyckyj

Two additional EPA pilot community-based environmental education activities, managed by the ISC, were conducted in Ivano-Frankivsk and Chmelnyckyj. ISC developed an environmental education curriculum based on work the institute had done in Ukraine.

4.2 Activities of Others

Other groups are actively involved in contaminant source identification and reduction activities related to improving environmental health conditions. Contaminant source identification activities include the Canadian Environmental Management Development in Ukraine (EMDU) Project and the Tacis Project to Strengthen the State Environmental Inspectorate of the Ministry for Environmental Protection & Nuclear Safety of Ukraine. Contaminant reduction activities also include a water-unit installation activity undertaken by MAMA-86 and the development of alternative water sources undertaken by a Kiev working group on local water issues.

Canadian Environmental Management Development in Ukraine (EMDU) project

Primary objectives of the three-year \$5 million Canadian EMDU Project included strengthening of Ukrainian institutions to manage the Dnipro River system and reduction of water pollution in the Dnipro River, specifically in the Zaporizhia region. Project components included the following:

- Completion of four environmental audits in the agro-industrial sector
- An audit of Zaporizhzhia vodokanal operations (physical and institutional)
- Development of an environmental management information system for the Dnipro river basin featuring a geographic information system (GIS)
- Human resource development for selected decision makers in the MEPNS and State Committee for Water Resources central and regional offices
- Development of a baseline water quality study of the Dnipro River
- Policy and public education to help support the National Dnipro Rehabilitation Plan

The \$5 million project was completed in 1997. Approximately \$4.7 million has been allocated for Part 2 of the project, which is scheduled for implementation from 1997 through the end of 2000. The \$4.7 million will be issued to various organizations through grants, which require in-kind contributions on the part of the grantee. Part 2 of the project is comprised of the following seven activities, many of which are focused on water and will occur in Zaporizhia:

- Drinking water quality
- Public outreach through television
- Environmental information management
- Environmental audits and clean production
- Solid waste
- Development of biotest systems for quick detection to toxicity
- Supplementing of environmental businesses

Tacis Project

The Tacis Project is a European Union (EU) initiative to foster the development of harmonious and prosperous economic and political links between the EU and partner countries of the Newly Independent States and Mongolia. The overall objective of the Tacis Project is to facilitate improvements in the system of enforcement of environmental regulations in Ukraine. Project tasks include improving MOE/State Environmental Inspectorate (SEI) organization and procedures, optimizing procedures for inventorying and controlling hazardous substances, improving community involvement with the Inspectorate, and developing procedures and procurement of equipment to strengthen the operations of the SEI laboratory system. Some responsibilities of the SEI and SES overlap, yet little cooperation exists between government agencies charged with control over the environment. As a result, one of the primary Tacis Project recommendations will be the establishment of an interagency environmental coordinating committee.

MAMA-86 Reverse Osmosis Units

To address drinking water concerns in the community of Tatarbunary located in the Odessa oblast, MAMA-86 provided a small-scale reverse osmosis (RO) membrane system for treatment of water to a Tatarbunary kindergarten. The unit was installed in May 1999. RO is a very sophisticated treatment technique, and it may be that simple disinfection, such as the ozone disinfection system CUNY used at a Kiev hospital, would be adequate to protect children's health. Provision of this RO unit may result in an environmental health benefit for children that attend the kindergarten, but without adequate baseline water quality data, it is difficult to estimate the real benefits of this system and whether a sophisticated RO system is necessary. Currently, MAMA-86 is contemplating assistance for the Sevastopol City Communicable

Diseases Hospital drinking water, wastewater, and heating systems. While the provision of improved water supply at kindergartens and hospitals is good, MAMA-86 should consider extending the environmental health benefits of improved water supply by serving a population that can benefit over a longer term such as a school that children attend at least three or more years.

Kiev Drinking Water Working Group

Kiev water authorities established a working group to solve their city's drinking water supply problems. Members of the working group include a representative from the local SES, the head of the Kiev City Council Committee on water ecology, and the head engineer and laboratory specialist from the Kiev vodokanal. The Kiev City Council Committee on water ecology has been created by the municipal administration of Kiev specifically to address community concerns about water quality. The individual heading the committee is a physician self-educated about environmental concerns. Currently, the vodokanal laboratories sample water at all stages during treatment every day. The SES tests at the same places, but only twice per week. SES reports that it measures 35 parameters across three categories: bacteriological, sanitary and technical, and radiological. Once a month, SES tests according to 75 indices. As a result, SES reports that it conducts 8,000 tests annually. Its results deviate from the standards for quality of testing only 0.5% of the time. SES reports that its tests serve to confirm those of the vodokanal.

Historically, the Kiev vodokanal water distribution network was supplied with water from three sources: the Dnipro River, the Desna River, and several water wells located in Kiev. Currently, because of high organic loads, low dissolved oxygen content, color, and alga growth in water storage reservoirs, vodokanal officials are no longer using the Dnipro River as a water source for Kiev. (Vodokanal officials report that these conditions require extensive use of alum in the treatment process.) As a result, the working group has decided to increase water use from the Desna River as a source for the water treatment plant. The working group reported that studies show that the aquifer underlying Kiev, which currently provides about one-third of the water supply, is good quality drinking water. To supply residents with more drinking water from groundwater, the working group has drilled more wells and constructed city standpipes from which residents can fill bottles and handcarry water.

The Center of Ecological Studies from Mohyla Academy has conducted a sociological survey of residential water usage in Kiev and is reviewing new treatments. Results from the survey indicate that 33% of residents consume water directly from their household tap, 16% use some type of household point-of-use treatment, and 35% consume water from wells. The working group considers it a great achievement that many residents consume water from wells and taps because members believe the water distribution system is in poor shape. They also believe that many of the activated carbon filters being recommended by private-sector distributors as point-of-use treatments have not been adequately researched and that using them may actually be worse than not using them. The working group has held a roundtable with NGOs to discuss how to get accurate information to the public. Members realize more needs to be done to notify the public about water quality and the group's efforts to address Kiev's water quality problem, and they would like assistance in this effort.

Ukrainian State Committee on Housing and Municipal Economy

Currently, the Ukrainian State Committee on Housing and Municipal Economy is engaged in maintaining and, when possible, rehabilitating components of existing water and wastewater treatment plants and (WWTPs) throughout Ukraine. According to the Deputy Chief, water plants and WWTPs were never designed for treatment of industrial wastes. WWTPs incorporate a basic design, typical in most countries, including the United States, to remove turbidity and bacteria. Their design does not include direct technological approaches for removing NO₃, pesticides, heavy metals, and industrial wastes. In most developed countries, industries are responsible for pretreating their waste stream before it can be discharged into municipal WWTPs. The Deputy Chief indicated that improved laboratory and analytical capabilities are needed, especially to help monitor and meet water quality standards.

5 Overview of Occupational Health and Safety Activities

5.1 Who Addresses OHS at the Local and National Levels?

Local Government Interests and Actions

At the local level, the SES has the primary responsibility for inspecting enterprises and enforcing OHS norms. The employer is responsible for ensuring compliance with occupational norms and standards, and the SES must inspect to ensure that this is being done. To determine this, SES inspectors and physicians periodically survey working conditions. They are supposed to perform these surveys at all types of enterprises, but because of reduced financing from the state budget in the last year, the performance of these surveys has decreased. As a result, only 15.8% of enterprises are complying with occupational health norms. The majority of the enterprises that are not meeting the norms are coal mining, iron-ore mining, metallurgical, and engineering industries.

During the SES inspections, inspectors work closely with the enterprise to develop a plan of action for reducing worker exposure and hazards. Inspectors revisit the enterprise in six months to determine if the improvements are occurring. They continue monitoring and working with the enterprises to meet their goals.

Rural SESs report that information from surveys of enterprises is not being shared in a timely or comprehensive manner with the national Institutes for Occupational Health (IOHs). They indicate that occupational disease is being reported only if it is officially diagnosed.

For many years a department of occupational health has existed within the Ministry of Health (MOH). Until recently, this department was involved in occupational health and had medical units at industrial sites. Labor hygienists were associated with each industrial site and their aim was to reduce exposure to industrial contaminants and prevent occupational diseases. Facility inspections typically included workplace air monitoring as well as identification of physical hazards. In recent years, however, the medical units at each industry have closed because of financial constraints.

Enterprises must provide annual medical examinations for workers. Unfortunately, the enterprises are currently having a difficult time funding the cost of these physicals. Industries are cutting back on their support for workplace monitoring and physicals for workers. As a result, more pressure is being put on government health institutions to pay this cost.

If potential occupational health problems are suspected during annual physicals, primary health care physicians can refer workers to a city occupational health pathologist. Primary health care physicians are not permitted to make an occupational disease diagnosis themselves. They can only refer such cases to the city occupational health pathologist or to a special clinic that is allowed to diagnose occupational diseases. If the city pathologist determines that the person has

an occupational health disease, the individual is then sent to one of the 10 occupational disease clinics for an official, final diagnosis. Physicians at all levels are probably underreporting for a variety of reasons:

- Primary care physicians have no training in occupational diseases and, therefore, are unlikely to recognize an occupational disease unless the symptoms are extreme and very obvious.
- Most likely, occupational health physicians are told to refer only extreme cases because of the costs the government incurs to treat and rehabilitate workers diagnosed with occupational disease.

Ten years ago, each worker had an annual health exam. Now, exams are either not provided or not provided regularly. Currently, the only cases that are being reported are extremely severe cases where rehabilitation is often impossible, rather than mild cases in which preventive and rehabilitation measures could be successfully employed. Enterprises have expressed a need for help in paying for annual physicals.

At least some industries appear to be moving ahead with improvements in OHS. The cement plant the team visited in Dniprodzerzynsk had made some equipment improvements to reduce worker exposure. The plant also identified two additional filter and air-pollution reduction technologies it would like to install if funding were available. In addition, the plant recently applied for an EBRD loan, and improved OHS was a necessary part of that proposal.

National Support and Policies

Nationally, there are four IOHS. They are located in Kiev, Kharkiv, Donetsk, and Kivy Rog. The institutes are part of the Ukrainian Academy of Medical Science and they collaborate closely with the MOH. The 10 clinics are under the auspices of the MOH, but each clinic is aligned with a particular IOH.

As discussed earlier, the official diagnosis and reporting of occupational diseases is severely hampered by the compensation system. The institutes are very concerned about underreporting of occupational diseases as a result. Workers who receive an official diagnosis of an occupational disease are entitled to a costly compensation package that the government cannot currently afford. Thus, there are numerous barriers to receiving such a diagnosis. Dr. Yuri Kundiev, director of the IOH in Kiev and well known to most IOH professionals as a former teacher and mentor, estimates that the current large compensation costs are six times higher than what it would cost to protect workers or treat them at earlier stages.

Dr. Kundiev noted that the International Labor Office in Geneva estimates that approximately 4% of cancer cases are attributable to occupational settings. Dr. Kundiev stated that if this statistic is projected to Ukraine, Ukraine should have 12,000 reported cancer cases per year of occupational origin. Currently, only about 50 such cancer cases per year are reported. Dr. Kundiev believes the system discourages oblast occupational pathologists and IOH occupational disease physicians from reporting illnesses as an occupational disease because the government would have to pay costly compensation benefits for the worker.

In addition, the institutes and the SES inspectors have limited experience working with the growing number of small-scale and private enterprises. Today, many businesses are small and privatized, and the IOHs do not receive adequate information from them. The institutes are concerned because in many of the small, family-owned enterprises, the families work very hard and are vulnerable, yet their occupational health problems are not getting reported or treated, much less prevented.

The IOHs do not have a computerized registry for occupational diseases, rather, they receive information from the field by mail. Eager to develop a modern registry, Dr. Kundiev has developed a scope of work and budget for the development of a nationwide, computerized occupational disease registry. His estimate includes the costs training personnel in the oblast SESs and the IOHs, employing people at the institute(s), and providing the necessary computer hardware and software. The cost of this effort would be considerably less if salaries were not included.

Dr. Kundiev also believes that every worker (public or private) should have a greater understanding of occupational hazards so that they can be involved in developing and implementing disease and hazard prevention strategies. Under the Soviet system, the government did not disclose workplace hazards to workers. Dr. Kundiev believes that not disclosing this information to workers is not ethical or effective since it affects both their health and productivity. Currently, the only way to communicate this information to workers is through the local SESs, which have very little experience or training in information, education, and communication outreach to workers to promote safer behaviors and use of protective equipment.

Finally, the government still provides hazard pay to workers in a contaminated environment. A more positive approach would be to train workers to utilize protective equipment and practice safety measures and then provide “safety pay” as an incentive to those who comply with safety measures in contaminated environments. Dr. Kundiev estimates that the cost of hazard pay is also six times higher than what it would cost to prevent illnesses for workers in hazardous areas.

5.2 What Are the Priority OHS Risk Factors?

Information from the 10 occupational disease clinics indicates that the primary occupational health diseases are respiratory. Pneumoconiosis (silicosis) and chronic bronchitis account for most of the reported occupational disease, with coal miners experiencing the greatest morbidity. Because it may take some time for industries to control ambient air pollution levels within the workplace, the first major focus for respiratory protection should be identifying a variety of methods for decreasing exposure to workplace air contaminants. These methods should include formal respiratory protection programs; worker education, training, and incentives; increased use of adequate respirators; changes in work processes; and changes in the length of time workers are allowed in contaminated areas.

Physical hazards should also be addressed. Statistics on accidents are often not collected or reported, but many IOH and SES professionals believe that simply improving the physical safety of workplace environments would have a significant impact on workers’ health and well being.

5.3 What Do Ukrainians Think They Need to Mitigate OHS Risk Factors?

Dr. Kundiev and other OHS professionals want to change the function of the IOHs from conducting academic research to the following:

- Providing training in OHS to primary care physicians (who are now the front line health resource for workers), SES inspectors, industrial workers, plant managers, and plant engineers
- Implementing earlier problem identification and preventive actions by means of a more efficient and timely reporting system (updated, computerized occupational disease registry)
- Conducting epidemiological research

This new training role would not only help the IOHs become more financially sustainable, since they could charge the private sector and perhaps the oblasts for their services, but would provide a vehicle for applying their considerable expertise in a more practical and applied manner.

An updated occupational disease registry is supported by the IOHs; SESs at national, oblast, and rayon levels; the Ukrainian Scientific Center for Hygiene; and the Center for Hygiene Surveillance, so that they can be more effective in linking occupational diseases to specific industries and environmental risk factors, and be able to recommend and enforce preventive actions in a more timely manner. This information could also help primary health physicians identify occupational diseases more easily. The development of the disease registry would help with performing risk assessments, making decisions, levying fines, and performing other compliance measures. Realizing all of these benefits, however, depends on how the registry is used. Thus, any support provided for development of an occupational disease registry needs to include a major training component on how to use registry data for strategic planning and decision making at local and regional levels.

The IOHs also want a normative document on labor protection and worker hygiene to help them harmonize with European standards and broaden their opportunities for international collaboration. This type of legislation could be used to hold employers responsible for maintaining safe working conditions.

Finally, employers want government subsidies for annual worker medical examinations. The most important point, however, is that workers receive adequate annual health exams from doctors qualified to evaluate whether or not a worker may have an occupationally related disease or illness. Whether these exams are provided through a private health insurance system, through the current system of regional occupational disease clinics and occupational health specialists at SES, or through the return of labor hygienists and occupational physicians to industrial sites will depend on how health care system reforms develop.

5.4 What Others Are Doing

Citizen's Network – The Citizen's Network is already evaluating and providing recommendations for improving environmental and occupational health conditions in order to attract investment in dairies, chicken farms, pesticide companies, and other industries. Although the network's minimum mandate is to conduct EIAs to comply with USAID Regulation 216, the assessments that the EHP team reviewed had a broader scope and definitely included OHS issues. For example, two occupational risks the network discovered were occupational exposure to gas from ammonium refrigeration systems and the potential for injuries from system explosions.

Pest and Pesticide Management Project – The PPMP, discussed in detail in Section 4.1, has developed training modules and educational outreach and public awareness materials to inform the public about pesticide health risks and safe use of pesticides. A major health risk identified through the PPMP is the high use of pesticides on household gardens and the limited amount of information available to users on toxicity levels and protective measures to take when applying these chemicals. Of particular concern is the potential for exposure to children. Information, training programs, and materials developed for this program should now be applied, through existing Ukrainian institutions, on a wide scale with a solid monitoring and evaluation component.

World Bank - Currently, the World Bank is developing a Health Sector Management Project. The two primary components of the project are institution building and information management. The information management component calls for “the identification of key information requirements and the design of international data information services (data modeling, data base structure development) for strategic planning and effective policy analysis and formulation.” It will also improve the central level policymakers' access to quality information by ensuring the flow of information; for example, from the regions through the IOH to the MOH. An OHS registry would be important in facilitating information flow regarding occupational diseases and accidents.

5.5 What Measurable Results Could Be Used to Indicate Success?

The following are measurable results that could indicate success:

- Reduced occupational health risk factors
- Reduced absenteeism
- Reduced accidents

Workers are in a contained and supervised environment where data collection is more feasible than in the general population. Statistics on absenteeism and accidents are typically collected already, though seldom used as a basis or indicator for improving OHS.

With improved OHS training for agencies and the private sector, as discussed in the previous section, and subsequent site-specific improvements in health and safety procedures, statistics on

absenteeism and accidents could provide very convenient measures of program success. Information on worker smoking and drinking habits would permit controlling for these types of risk factors when assessing the impacts of improved OHS conditions in the workplace. Changes in specific occupational health risk factors identified as part of risk or hazard assessments could also be measured relatively easily by plant OHS staff. Risk factors would likely include behavioral (proper use of available protective equipment) as well as chemical (levels of air pollution in specific work zones) factors.

5.6 Opportunities for Achieving Results

5.6.1 Ukrainian Institutions

A skilled OHS infrastructure exists that could significantly improve OHS throughout Ukraine with updated training programs and training of trainers. By investing in training, with the extremely important addition of follow-up coaching for selected personnel in the four IOHs and key OHS personnel (SES inspectors) at the oblast level and in major cities, OHS would be improved, even with limited resources. This training could also provide a basis for prioritizing modest investments in more modern personal protective equipment.

There are many relatively inexpensive changes in knowledge, attitudes, and behavior that could be made as businesses and industries work to accomplish longer term and more expensive rehabilitation. For example, introduction of clean practices, helping workers understand how they or their families can be exposed to work place contaminants, identifying and removing physical hazards from the environment, and encouraging behaviors like showering and changing clothes before going home could accomplish a lot. Any OHS improvement program would also need to include an appropriate level of monitoring and evaluation that could be shared with workers and used to improve program effectiveness. Training specific and larger industries with significant OHS problems, such as the coal industry, should also be considered.

5.6.2 USAID Activities

Opportunities to improve OHS practices exist in several ongoing USAID activities. For example, the RADII project should expand and be more explicit about including OHS in its assessments. This is especially important if the project works more with family farms and small agricultural enterprises that are not likely to be inspected by the SES. These smaller enterprises will also need more outreach programs and materials such as those developed under the PPMP.

USAID staff designing the new BizPro activity are receptive to including private sector training for improved OHS to increase opportunities for foreign investment in industries, establish a precedent for addressing occupational health as economy improves, and increase productivity in industries.

To the extent that USAID energy sector activities include working with power plants to improve efficiency and reduce emissions, it would be useful to work with SES inspectors and plant managers to improve OHS within the plants.

5.6.3 Others

World Bank Project – For OHS issues, one link to World Bank health sector management reform efforts would be to include an occupational disease registry as part of the information management and international data information services.

6 Overview of Environmental Health Activities

6.1 Who Addresses EH at the Local and National Levels?

Primary responsibility for “preventing [the] harmful impact of dangerous environmental factors and poor work conditions on human health” lies with the SES within the MOH as defined by the June 22, 1999, Resolution No. 1109 of the Cabinet of Ministers of Ukraine (Appendix B). The SES is represented at the national, oblast, city, and rayon levels of government in Ukraine. At the oblast level, SES station staff include sanitary doctors specializing in public health, occupational disease doctors, health centers responsible for public health education, analytical laboratory personnel, and a variety of support staff. Depending on size and need, city and rayon SESs may have some or all of the same types of personnel.

SESs carry out their mandate through inspections of enterprises and provision of recommendations and by monitoring drinking water quality and other media as necessary and as they are able. Analytical capability is far below what is needed to monitor for all of the established chemical norms for all media. Not only are the necessary analytical equipment and associated training inadequate, but there is an absence of almost any kind of internationally acceptable QA/QC program. Dissemination of SES reports are not restricted, but they are handwritten and not in a format that would be especially easy for the public or the average worker to understand. The relationship between SES inspections and MOE inspections at local levels is not clear; however, MOE inspections definitely do not consider OHS or specific human health problems caused by environmental factors, rather they appear to focus entirely on compliance with contaminant discharge limits or with environmental standards for air, water, or soil.

As elsewhere in the former Soviet Union, local government agency representatives are supported by a variety of national institutions that conduct research and provide analytical or procedural guidelines. For the local SES inspectors, one of the most important supports is the Ukrainian State Center of Sanitary Supervision. This center assists SESs and municipal governments with enforcement of environmental health standards and compiles and maps disease data.

Despite the competition for funding that occurs between these institutes and centers, there appears to be general agreement that the USCH is the most respected and comprehensive institute that has a specific mandate to address environmental health issues. USCH also was the only agency or institute the EHP team visited that demonstrated work in environmental epidemiology, albeit at a rudimentary level. USCH also led the production of *Environment and Health of the Ukrainian Population: Report to the Environmental Health Action Plan*, and coordinated multi-stakeholder, national input to development of the NEHAP.

The Institute of Pediatrics, Obstetrics, and Gynecology (IPOG) currently leads the Families and Children of Ukraine Project, which includes the European Longitudinal Study of Pregnancy and Childhood (ELSPAC). This seven-year effort has followed a cohort of approximately 8000

women who gave birth in 1992 in four different cities in Ukraine (Kiev, Dnieprodzerzhinsk, Mariupol, and Krasny Luch). Health, social, and behavioral data are collected periodically, but no environmental data are collected. However, the Great Lakes Center in the School of Public Health at the University of Illinois, in conjunction with EPA, has collected and analyzed environmental data on Mariupol and combined it with ELSPAC data to perform a risk assessment, which is discussed in the next section.

6.2 Assessing Priority EH Risk Factors

EH risk factor identification and prioritization of interventions to reduce risk are critical tasks that ensure that scarce resources are applied most effectively to achieve the desired health improvements. Accurately prioritizing EH risk factors at a local level and mobilizing community risk-reduction activities requires the following:

- *Local health data* that identify the major types of ill health (including infectious and noninfectious diseases and accidents)
- *Reliable analytical data* for the major sources of chemical or bacterial contamination (industrial discharges, ambient surface, or groundwater) and for the most likely exposure pathways (typically ingestion of dust, soil or water, and inhalation of air)
- *Risk assessment tools*, adaptable to local situations, that can integrate chemical and bacterial data and knowledge of local behaviors (including nutrition, smoking, community and household hygiene behavior, and alcohol consumption) to estimate exposure and identify more vulnerable segments of the population
- Public knowledge and understanding of the concept of acceptable risk

In some cases, it is possible to take action to reduce environmental risks without a full and complete understanding of all the factors mentioned above. For example, reducing disease transmission vectors such as rodents or keeping sewage/fecal contamination separate from drinking water may, in many circumstances, be obvious solutions, *if* the diseases of most concern are related to these vectors or disease agents. However, this is not the case when the risks or diseases of most concern may be due to a variety of chemical exposures in relatively small, unseen amounts that are very expensive to remove and have disease outcomes such as cancer that may take many years to develop. Then the need to understand and prioritize those exposures becomes a practical and economic necessity.

Unfortunately, at the present time in Ukraine, not only are risk assessment tools and the supporting information very limited, but the concept and process of prioritizing environmental interventions to improve health based on calculated estimates of relative risk are largely unknown. Thus, most of what the EHP team heard about EH risk factors should be considered somewhat subjective perceptions. In addition, the lack of tools, resources, and a process to accurately prioritize risks means that all the problems appear to be equally important and, therefore, so overwhelming to many people that taking action becomes very difficult.

The rest of this section is divided into a general discussion of perceived EH risk factors (6.2.1) and a specific discussion of water quality issues (6.2.2).

6.2.1 Perceived EH Risk Factors

The general public and health professionals have different perceptions of what constitutes the major EH risk factors, but drinking water is often cited as a problem. As discussed above, both public and professional perceptions are limited by incomplete or unreliable laboratory analytical data, a rudimentary knowledge of current environmental epidemiology practices within the professional community, and inexperience with the concept of both risk assessment and the notion of acceptable risk.

According to a recent Gallup Poll conducted by MAMA-86 and verified by the EHP team's visit, the general public perception is as follows:

- Environmental pollution is pervasive and a major disease risk factor.
- Drinking water quality is the health risk factor of greatest concern.

These perceptions simply illustrate how a limited and very general understanding of a problem results in a very general concern.

As demonstrated by the technical support document for NEHAP and the actual NEHAP, Ukrainian health professionals describe the major EH risk factors as follows:

- Air pollution probably poses the greatest health hazard at industrial locations and likely increases the local burden of chronic, noninfectious diseases, especially respiratory diseases.
- Drinking water problems are mostly bacterial and are probably more widespread than air pollution problems.
- Food hygiene problems are also mostly bacterial and fecal related.
- Smoking, alcohol consumption, and nutrition are well-known risk factors that contribute significantly to poor health, but they receive little attention from the health sector.

These perceptions reflect a more knowledgeable understanding, as well as the inability to measure toxins in drinking water. It is likely that bacterial water problems, resulting from a deteriorating infrastructure and distribution system, are more widespread; however, the extent to which drinking water is contaminated by toxins is largely unknown.

The perceived risk from chemical pollution is high, but the actual and relative risks are unknown because of the inability to measure low levels of toxins in environmental media and the inexperience with using environmental data and behavioral information to assess exposure and determine relative risks. Air pollution concerns are supported by reported source emissions data as well as reported ambient air data, both of which may underrepresent actual air contaminant concentrations. The U.S. National Institute for Environmental Health Sciences (NIEHS) conducted a thorough review of environmental monitoring in Kiev and Dneprodzherzhinsk in 1996 (Wadden et al. 1996) and cited a number of significant "built-in deficiencies in the monitoring programs." For air sampling, these deficiencies included very small averaging times and sample sizes; outdated and insufficiently sensitive analytical methods; poorly sited and often inoperative air monitoring stations; and poor housekeeping in most laboratories. It is likely that these deficiencies are present throughout Ukraine and that some of these deficiencies result in an underestimation of the chemicals present in the air. Comparison of these data to international

norms, therefore, should not be considered reliable or conclusive in defining the nature of the air quality problems in Ukraine.

Health data and the proximity of large population centers to large industrial emission sources also support air pollution concerns. NEHAP and supporting documentation cite increased immune deficiencies, chronic bronchitis, bronchial asthma, and tracheal and lung cancer in populations near industrial areas. However, a brief comparison of the mapped air pollution data with the mapped health data for bronchitis and asthma and for tracheal and lung cancer in the NEHAP's technical support document did not indicate a strong correlation. Given the analytical limitations and the need for more rigorous environmental epidemiology training, however, this data comparison probably has little meaning. In addition, Dr. Natalia Chislovska, a senior researcher at IPOG, indicated that respiratory problems are the most prevalent health problem for children, though she did not specifically link this problem to industrial areas. It is also likely that smoking, second-hand smoke, and occupational exposures contribute significantly to these health effects, as acknowledged in the technical support document for NEHAP. Thus, programs to increase community awareness and understanding of health risks from air pollution need to include other important risk factors that people can control, such as smoking.

Three recent studies regarding the potential health impacts of chemical contamination in Ukraine are worth noting here. The first two are NIEHS surveys of contaminants in breast milk from Kiev and Dniprodzerzhinsk. One survey determined concentrations of organochlorines and the other determined concentrations of dioxins, dibenzofurans, and PCBs. Both surveys used subjects from the ongoing ELSPAC study. The organochlorine study showed that median breast milk concentrations of DDE/DDT and b-HCH (a lindane isomer) are higher than those reported from other countries in Europe but "comparable to or lower than levels seen in some other parts of the world." Concentrations in Kiev were only modestly lower than those from Dniprodzerzhinsk. The dioxin and PCBs survey showed results similar to other recent studies from Europe and Asia, with little difference between Kiev and Dniprodzerzhinsk.

The third study is a recent, formal risk assessment that EPA conducted in Mariupol (Donetsk Oblast) and Kiev in conjunction with the Great Lakes Center at the School of Public Health at the University of Illinois. This study combined ELSPAC data with recent environmental data, collected and analyzed using more rigorous analytical and QA/QC procedures, to conduct a risk assessment using EPA guidelines. As discussed in Section 4.1.2, the exposure pathways that were found to pose the most significant health risks were inhalation of ambient air and consumption of locally caught fish in Mariupol. Ambient air in Mariupol is contaminated with chromium, PAHs, and particulate matter. The two major fish contaminants are PCBs and DDT. This study is a good model for risk assessment training in the heavily industrialized southeast region of Ukraine.

Finally, it must be noted that potentially significant EH problems, such as lead exposure to young children, may currently be completely overlooked because of three factors. First, reported ambient air concentrations of heavy metals are particularly unreliable and very likely underreported (Wadden et al. 1996). Second, the major significance of secondary exposure pathways for metals via soil and dust (more significant than air, even when air is the primary source) is not well understood by health professionals. And third, as far as the EHP team could

determine from the health professionals interviewed, there has been little or no blood lead screening of young children in the industrialized areas of Ukraine and knowledge of the significant and lifelong impacts of lead poisoning in young children is very limited.

Although the actual health risks from chemical pollution are probably high in specific locations (hot spots), it is likely that bacterial contamination of drinking water is more pervasive. Drinking water quality issues are discussed in the next section.

6.2.2 Water Quality Issues

Assessing Water Quality Related Health Concerns

Water quality and its effect on health are important public concerns in Ukraine. Although existing analyses of the ambient environment indicate that air pollution may be the most significant source of chemical contamination, there is still a perception that water is a major source of chemical contamination and poses a health hazard. In numerous discussions about water quality with SESs, vodokanals, ministries, and institutes, the *documented* water quality problems tended to be aesthetic rather than toxic. However, inadequate laboratory equipment detection limits and outdated analytical procedures, as well as a lack of QA/QC, limit the usefulness of local data in assessing whether current water quality poses a health risk. The significant “built-in deficiencies in the monitoring programs” cited in the 1996 NIEHS review of the status of environmental monitoring in Kiev and Dneprodzherzhinsk (Wadden et al. 1996) include water quality testing.

The primary public issue around water quality testing is one of trust. The public often blames everything from cancer to kidney stones on the quality of water. Because Soviet-era regimes reportedly forbid the publication of substandard water quality results, citizen groups want either independent testing of the water or testing done in their presence. Water quality reported by utilities is frequently not believed because of this past experience. These suspicions combined with the overall lack of adequate and reliable laboratory analytical capacity in Ukraine makes water quality assessments very difficult at this time.

Addressing public concerns about water quality and its potential impact on health requires the following:

1. *Adequate Data Quality*

- Given the type and level of industrial development and known sources of both ground and surface water pollution, are all of the necessary parameters being measured?
- Are the analytical procedures able to detect chemicals at the appropriate detection limit, that is, at a level at which health effects are likely?
- Does the water sampling design result in water quality data that are representative of actual human exposure or is sampling only done at the utility sources, not including “at the tap” or domestic well sampling?

2. *Risk Assessment*

Human health risk assessment, based on accurate and adequate water quality data, is a relatively simple and straightforward process, commonly done in the United States and Europe where there is general agreement regarding toxicity reference values for most of common industrial pollutants. For the results to be credible, however, reliable and adequate data (discussed above) are required. The risk assessment process can also be used to build transparency and trust by ensuring the participation of all the relevant stakeholders. Transparency in terms of the amount of exposure assumed, toxicity data, and other factors can build public confidence in the results of the risk assessment.

Attempts to Incorporate Water Quality Results in Previous Projects

The Canadian EMDU project included water quality analyses as part of a baseline water quality study performed on several reservoirs on the Dnipro River. Water quality was studied in detail in the Khovka and Zaporezhia reservoirs. Water quality was found to be worse in the Khovka reservoir, primarily because of discharges from the communities of Zaporezhia, Dniprozherzhinsk, and Dniperpertrosk. EMDU staff indicated that during the development of the baseline study, they also experienced problems with reliability of water quality data. To address these problems, officials sent water samples to laboratories in Bratislava, Slovakia, and Canada. Currently, the EMDU uses two local laboratories to analyze results: the Institute of Inorganics and Water Chemistry in the Academy of Science (which houses equipment provided under the Kaniv project), and a Ministry of Defense laboratory. EMDU staff indicate that they believe that these laboratories are currently providing reasonable results. They indicate that the Ministry of Defense laboratory is not used very much since (1) people do not know about it, (2) it is too expensive to pay for lab testing, and (3) ownership of the lab is unclear between the Ministry of Defense and the Ministry of Environment.

Assuming sufficient funding was available and accurate water quality data were known, it would be possible to add additional processes to community water treatment plants to treat for toxic substances in the water. However, it is common practice and makes far more economic and environmental sense to have industries responsible for pretreating discharges before releasing them into WWTPs or to the environment. This especially applies to industries that release discharges to the Dnipro River and its tributaries, since the Dnipro provides 70% of drinking water in Ukraine. The MOE/SEI has been authorized to conduct State control over the environment. As the economy improves, existing industries will be reestablished or rehabilitated. In addition new, private-sector enterprises may be built. At this time, it will be very important for organizations such as the SEI to control wastewater discharges so that predominant drinking water sources such as the Dnipro River and its tributaries do not experience increases in pollution.

Both Canadian and U.S. projects have provided assistance to address control of wastewater discharges. The Canadians have demonstrated successful projects along the Dnipro, aiding enterprises to change processes within their facilities, which resulted in wastewater discharges with reduced levels of toxic substances. During the Kaniv Reservoir Project, a water quality and quantity model was developed for the Kaniv Reservoir to help the SEI set wastewater discharge permits for industries in the reservoir. This was important because it helped the MEPNS to make more informed reservoir management decisions based on modeled estimates of water quality

under various flow regimes and to develop a Kaniv Reservoir Restoration Management Plan. After successful completion of the Kaniv Reservoir Project on the Dnipro River, a similar study and modeling effort was completed in the Dnipro Estuary.

Today, some communities are working together to address their own water supply issues. For example, in Kiev, a multiagency working group has been established to address community concerns about water quality. The working group has taken actions to increase availability of improved sources and to communicate with the public. Given that major funding is needed to repair failing water supply infrastructure, and the fact that existing maintenance funds are insufficient for existing maintenance needs, many vodokanals are faced with prioritizing which components of the treatment and distribution systems to operate and repair. Deciding the most appropriate course of action through a participatory community forum, such as the forum developed by the Kiev working group, is likely to be the most effective method. In addition, community forums can put pressure on government entities to advocate for policy reforms that will attract lending from multilateral funding institutions.

To support local environmental action planning that involves community processes centered on water, USAID may want to assist communities in acquiring reliable information for their own decision making. Communities will need assistance in funding water quality testing from reliable labs, providing technical assistance on risk assessment tools, and facilitating public participation during local action planning processes.

Conclusion

Water quality problems for each community must be addressed on a case by case basis.

Treatment decisions must be based on the following:

- Reliable and adequate water quality data and established risk assessment procedures
- Realization that water quality received at a dwelling is at least as much dependent on integrity of the distribution system as treatment
- Recognition that significant infrastructure investments are likely to require loans from multilateral donor agencies

Short of getting infrastructure loans, stakeholders can increase community awareness, promote behavior change if necessary (such as boiling water or obtaining water from other sources, as was recommended in Kiev), switch water sources (in Kiev, new wells were drilled and community water source points installed to provide people with an alternative drinking water supply), educate the public about risk factors, and employ small point-of-use treatment/disinfection units, such as has been done at some local hospitals and schools.

6.3 What Do Ukrainians Think They Need to Identify and Reduce EH Risk Factors?

Ukrainian health and environment professionals as well as NGO representatives consistently identified a limited set of specific technical training and process training needs as follows:

6.3.1 Technical Training Needs

- **Risk assessment tools and methods** for both the professional, scientific community and the nonprofessional community. It became apparent early on that effectively engaging municipal and community leaders, as well as project managers, required training in risk assessment concepts and methods for nonprofessionals, as well as for scientists tasked with conducted risk assessments. Ukrainians have also recognized this need.
- **Environmental epidemiology training** for environmental health research professionals. It is recognized that the goal of this training needs to be twofold: (1) to increase the rigorousness of this discipline in Ukraine regarding overall research designs, evaluation of data quality, and use of biostatistics and (2) to focus on how the results of these types of investigations can and should be used for decision making at local levels.
- **New IEC methods for public health education and behavior change.** NGO representatives, SES Health Center staff, and municipal leaders all seemed to recognize the need for improved public outreach. This is not surprising given the absence of attention to and experience with this topic under communist regimes where the focus was simply on issuing orders or edicts.
- **Increased laboratory analytical capacity and methods consistent with Ukrainian norms and standards.** For reasons discussed in previous sections, this is an obvious need, though not necessarily easy to address. Suggestions for addressing this need are discussed in Chapter 7.

6.3.2 Process Training Needs

- **Facilitation skills for information sharing and community participation.** Both health and environment professionals as well as NGO representatives and oblast level leaders expressed this need as a general concern. This is not surprising given the lack of previous models for even the concept of information sharing and participation, much less the mechanics of how to make it work. Facilitation skills for information sharing and participation need to be included for activities within the professional community as well as for activities linking the professional community with the public.
- **Overall approaches and methods for conducting LEHAPs.** This expressed need recognizes that a scientific risk assessment process needs to be complemented by a community risk assessment process that integrates community concerns and knowledge with scientific concerns and knowledge for the mutual benefit of each. The benefits are increased understanding of exposure pathways and potential health effects, and increased understanding of the concept of relative risk and priority setting for community-based actions with limited resources.

6.4 What Measurable Results Could Be Used to Indicate Success?

Although more detailed measurable results would need to be developed for specific programs or activities a few potential candidate indicators of success are the following:

- **Number of community-based LEHAPs conducted with:**
 - broad participation (type and number)
 - local government, NGOs, SES, schools, primary care
 - sound technical input
 - resulting concrete actions taken
- **Surveyed community understanding of:**
 - where and how to get reliable EH information
 - local EH risk factors
 - how to reduce exposure to environmental contaminants for children and adults
 - their rights and responsibilities regarding access to information from industries
- **Primary care physicians' knowledge and use of**
 - environmental and occupational histories for all patients
 - links between environmental exposure and disease outcomes
 - symptoms of environment-related diseases

NOTE: Training of primary care physicians was not an expressed need but is included as a recommendation in Chapter 7.

6.5 Opportunities for Achieving Results

There are some significant opportunities for achieving results:

- Working with Ukrainian institutions that provide the opportunity for scale up to a national level through concurrent training of oblast-level health and environment professionals and NGO leaders
- Providing support for EH components that could be added to existing USAID activities.

These opportunities are listed here and discussed further in Chapter 7.

6.5.1 Ukrainian Institutions

As with OHS, a skilled and deep EH infrastructure exists within MOH in the form of SES networks that reach all urban and rural communities and supporting national institutes, such as the USCH. This infrastructure could significantly improve EH throughout Ukraine with updated training programs and training of trainers in risk assessment and environmental epidemiology to support implementation of NEHAP at local levels. For industrial areas of southeast Ukraine, the

EH study recently completed in Mariupol could be used to illustrate a model approach as well as demonstrate the use of ELSPAC data in conducting LEHAPs.

Investing in training, with the extremely important addition of follow-up coaching for selected key personnel at the oblast level and in major cities, would provide the opportunity for rapid scale up of techniques and procedures for improving EH, even with limited resources. This training could also provide a basis for prioritizing modest community investments in exposure abatement.

There are many relatively inexpensive changes in knowledge, attitudes, and behavior that could reduce exposure to environmental contaminants. For example, increased planting and groundcover in public spaces and improved household hygiene to reduce dust exposure; more thorough washing of all locally grown produce; increased community awareness of potential exposure pathways and populations at higher risk, such as children; and use of water sources with reliable quality could accomplish a lot. Any EH improvement program would also need to include an appropriate level of monitoring and evaluation that could be shared with the community and used to improve program effectiveness.

6.5.2 USAID Activities

Opportunities to improve EH practices exist in several current USAID activities described briefly below.

LEAP and EcoLinks

USAID's new LEAP activity will have important opportunities to link with Ukrainian-led LEHAPs at locations where the LEAP focuses on brown environmental issues. At these locations, the implementors of LEAP should work with local SES and MEPNS personnel to determine what types of links exist between the brown issue of concern and EH concerns at that location. The ultimate goals would likely include community-based initiatives to reduce health risks and cooperation with industries or other sources of pollution to reduce emissions. Presumably both the LEAP and LEHAP efforts will include some type of risk-based prioritization schemes, and they could mutually benefit from sharing resources.

EcoLinks, a USAID environmental grant program, could provide critical support to both LEAP and LEHAP by helping to fund specific health risk-reduction projects identified and supported by local communities. Communities in other countries in the region have also obtained this type of support from RECs.

Municipal Partnership Program (MPP)

USAID's MPP offers some great opportunities to use existing EH, and perhaps OHS, concerns in municipalities as one focal point for reaching the goal of improved management of services. For example, the strategic action plan developed by the municipality of Cherkasy (Cherkasy 1999), through the MPP, cited their top three problems as poor quality drinking water, health care

service deterioration, and lack of garbage treatment. According the MPP staff who have worked with many communities, a high level of concern about EH issues is very typical.

The four regional MPP training centers would likely benefit from training curriculum developed specifically to assist municipalities, local NGOs, and other local stakeholders in identifying and addressing EH issues. For example, courses, along with follow-up mentoring programs, tailored to municipal managers, local NGOs, and local businesses could include the following:

- Community-based risk assessment
- Environmental health IEC for local health center staff and NGOs
- Environmental impact assessment training for local industries (supported by Citizen's Network/RADII and previous EPA EIA training)
- Community process facilitation (if not included already)
- Designing and funding community environmental initiatives

Health Partnership Program (HPP)

USAID's HPP is large and complex, but there may be an opportunity to target one specific need in the primary health care system pertaining to EH and OHS. The need is for primary care physicians to be able to recognize and treat or appropriately refer patients with occupational or environmentally related diseases or illnesses. Occupational diseases are not being diagnosed or treated in a timely manner, in part because industries are no longer maintaining on-site medical staff. Thus, primary care physicians are more often confronted with occupational diseases that are unfamiliar to them. In addition, most primary care physicians are unfamiliar with environmentally-related intoxication symptoms, such as pesticide poisoning, which occur in local populations near contaminated sites.

The first, relatively simple step to improve this situation is learning the value of taking an OH/EH history for each patient and understanding how to use this information in evaluating symptoms. Since the HPP is USAID's major primary health care program, it would make sense to try to incorporate filling this need into the program. One approach could be to provide an environmental and occupational health medical specialist to work with each partnership and conduct local training and training of trainers in locations where EH and OHS issues are likely to be important.

Peace Corps and the Regional Environment Center (REC)

Both the Peace Corps and REC include public outreach in environmental education as a major part of their programs. Specific attention to EH issues, however, is not common. In locations where LEHAPs or EH-oriented LEAPS are occurring, Peace Corps and REC could provide IEC support through the schools (Peace Corps) and NGOs (REC).

7 Summary of Key Findings and Recommendations

Overall, the EHP team was impressed by the following findings:

- Viability of the MOH/SES as a partner, because of their existing broad mandate for EH and OHS, staff interest in upgrading skill levels at both the national and local levels, obvious professional commitment, and built-in opportunity for scale up
- Opportunities to include EH/OHS-related topics into existing USAID activities
- Current lack of donor support for EH/OHS activities, despite considerable international discussion about disease prevention
- Historic (pre-Soviet) and publicly respected tradition of public health in Ukraine, as evidenced by how positively the SES and public health doctors are regarded by the public
- The fact that discrete training activities could contribute significantly to reducing EH and OH risk factors even though long-term fixes will take a lot more time and money.

7.1 Key Findings

The following key findings dominated the meetings and interactions with environmental and occupational health professionals, and with NGOs and community leaders.

- *A substantial and increasing list of international conventions and agreements and national policies and laws is providing momentum, a policy basis, and incentives for launching full-scale EH and OHS reforms and programs. One of the most important documents for environmental and occupational health is Ukraine's recent, collaboratively developed and WHO-supported NEHAP, presented by Ukraine at the June 1999 Environment for Europe Ministerial Conference in London. The NEHAP, developed collaboratively by the MOH, MOE, Academy of Medical Sciences, associated institutes and centers, and NGOs, is a logical focal point for accomplishing numerous EH objectives at the local level. In addition to ministerial support, NEHAP is also supported by previous international conventions (London 1999, Aarhus 1998, Sofia 1995, Lucerne 1993, and Dobris 1991), national environmental and health legislation in Ukraine, and environmental NGOs. As of November 1999, NEHAP was on a third and final cycle of signings with the Cabinet of Ministries, which means that it could soon become a resolution. Resolutions from the Cabinet of Ministries carry legislative authority but are more expedient than the normal legislative process and are used for matters of high interest.*
- *Within the environmental and occupational health professional community there is a large demand for risk assessment, environmental epidemiology, and OHS training and an opportunity to influence these practices at the local level. The core of this community is the MOH's SES and their associated institutes and centers, which comprise a well-placed, publicly respected, deep infrastructure with the potential to widely influence environmental and occupational health practices at the local level. SES and associated supporting institutes and centers, such as the IOH and the USCH which led the development of the NEHAP, have not been targeted for capacity building by any major donors. The demand and need for*

training within the professional community in the particular skill sets listed above, combined with Ukrainian plans to implement NEHAP at local levels, presents a timely and great opportunity to influence the practice of EH and OHS throughout the country.

- *Pollution in general, and drinking water in particular, often dominate public EH concerns, while local health professionals believe that respiratory problems, especially in children and those related to industrial air pollution and second-hand smoke, are the most pervasive EH problems.* Tremendous local and international resources have been spent to improve the quantity and reliability of drinking water supplies, yet the actual chemical quality of the water is often very poorly defined, preventing both an accurate assessment of the health risk, and a technical basis for evaluating the effectiveness of alternative treatment technologies. A similar lack of definition of air quality has hampered efforts to assess specific health risks and emission reduction priorities. A recently completed joint U.S./Ukraine research study entitled *Environmental Pollutants and Health Status of Children*, of conditions in Mariupol and Kiev, however, has provided a model for collecting, analyzing, and assessing local environmental data and combining this information with health data to evaluate EH risks to children.
- *There are nationwide limitations in laboratory analytical equipment, methods, and QA/QC procedures* which prevent
 - ? Accurate definition and prioritization of EH and OH problems and
 - ? Harmonization with EU norms or ISO 14000 standards.

In addition, the government currently spends tremendous resources collecting large amounts of environmental analytical data. Within SES labs alone, approximately 2.08 million samples are collected and analyzed annually, the results of which are often not reliable, especially toxics data (such as pesticides, metals, and solvents). In addition, these results do not appear to be effectively used for local epidemiological analysis, health program planning, or intervention purposes.

- *Effective strategies used internationally and in USAID programs for IEC to achieve behavior change have had very limited use in Ukraine, especially for disease prevention.* Health education within SES is the responsibility of oblast and rayon health centers that have an extensive network, but few resources. Health center staff could be significantly more effective in disease prevention with training in current IEC methods. It should be noted that EH/OHS IEC programs could also include strategies to reduce smoking and alcohol consumption, as well as improve nutrition, since the NEHAP recognizes that these risk factors are also contributing significantly to the disease burden.
- *Some local collaboration on EH issues between local agencies and institutions is already beginning to occur* as evidenced by a collaborative process occurring among the vodokanal (water utility), local municipal leaders, SES, university personnel, and community groups to improve water supplies in Kiev and by efforts to improve EH in Cherkassy that have involved informal collaboration among the local polytechnic university, the SES, primary care physicians, and municipal leaders. NGOs have a critical role to play in these collaborative processes because they are often the most skilled at educating and engaging the

public, but they could benefit from technical assistance when it comes to prioritizing EH concerns.

7.2 Recommendations

Eight recommendations for USAID/Ukraine emerged from this assessment. These recommendations, listed below, represent a variety of options that, overall, would be expected to have the following characteristics: use a participatory process to identify and prioritize EH/OHS risks at the local level, improve clinical diagnosis and treatment of EH/OHS related diseases, achieve risk reduction through community-based activities, and strengthen EH/OHS training and institutions at the local level.

- Provide technical support for implementation of the LEHAPs specified in Ukraine's NEHAP. Technical support would include training and provision of tools for oblast- and city-level health and environment professionals in risk assessment, environmental epidemiology, and IEC for behavior change. Existing key participants in LEHAP implementation include the USCH, oblast-level SES leaders, local health administrators (primary care doctors) and, potentially, local MOE inspectorates. In locations where LEAPs are focusing on EH issues, the LEHAP and LEAP could converge where appropriate and technical support from USAID could come through USAID's LEAP program if LEHAP lacks the necessary resources and support. Strategy for implementation and follow-up could include training sessions in selected regions to facilitate regional professional networking, with selected national representatives; pilot applications within a region as part of the training (e.g., Mariupol could be the model for the southeast, industrial region); and follow-up mentoring and problem solving for key leaders at sufficiently long-time intervals for questions and problems to arise. This is linked to Health SO 3.2b.1.5- Environmental and Occupational Health Risks Reduced and 3.2b.2.1 - Better Informed Decision-Makers.
- Provide technical support for promoting increased productivity and reduced environmental liability through OHS training at local levels and training and equipment for development and use of an occupational disease registry. OHS training could be industry specific or region specific. Existing key participants in OHS include plant staff, labor unions, and the SES, which has inspection and enforcement authority. Development of an occupational disease registry includes both national and local components and would need to include training to ensure that the information generated from the registry is applied to better understand and respond to local needs, as well as provide long-term epidemiological information for research purposes. This is linked to Health SOs 3.2b.1.5 - Environmental and Occupational Health Risks Reduced and 3.2b.2.1 - Better Informed Decision-Makers.
- Train primary care physicians to take and use OH/EH histories to evaluate symptoms that may be linked to occupational or environmentally related diseases. Primary care physicians need to know what to include in an OH/EH history (occupation, toxins in the workplace, hobbies or home businesses, location of residence relative to industry, type of household water supply), how to use this information in evaluating symptoms, and when a disease or illness may be related to occupational or environmental exposure to toxins or disease agents.

A vehicle for this training may be either USAID's HPP or a partnership with oblast-level health administrations in selected locations where the need appears to be greatest. This is linked to Health SO 3.2.b.1.5 – Environmental and Occupational Health Risks Reduced.

- Support USAID's MPP (SO 2.3.1.1) by providing training and curriculum support in health risk assessment for community leaders, providing IEC for community environmental health efforts, and facilitating collaborative efforts for community health risk reduction for the four regional training centers. This is linked to Environment SO 1.6.4 – NGO & Citizen Empowerment.
- Support U.S. Peace Corps efforts to develop environmental education curricula for public schools by providing technical assistance for EH risk identification and management components for parents and children. In Cherkassy, this support could be combined with the USAID Municipal Partnership Training Center curriculum support since the regional Peace Corps office and the Regional Training Center are in the same office building.
- Support USAID's new BizPro activity (SO 1.3) by providing an OHS training component within the training program envisioned for the Business Consultant's Association and promoting the outcomes of increased productivity and reduced environmental liability.
- Support USAID's democracy activities by introducing and including knowledge of public and private sector contaminant discharges to the environment as a specific citizen right (SO 2.1.1 – Citizen's Rights Upheld).
- Collaborate with EU's Tacis Project and the French government in their efforts to harmonize Ukraine's laboratory analytical capabilities and procedures with EU norms and ISO 14000 standards. The French government is working with the State Certification and Metrology Center, and EU's Tacis Project is working with selected MOE laboratories in coordination with French efforts. USAID could potentially work with selected SES laboratories in coordination with EU's Tacis Project and the French.

7.3 Critical Success Factors for Training to Be Effective in the Long Term

Because many of the above recommendations include training, it is worth mentioning a few of the critical success factors for increasing the effectiveness and long-term impact of training programs:

- Careful audience selection to ensure that participants will be willing to train others and will be supported by their employers or organizations in future training efforts
- Initial, in-depth training that focuses on content and models desired teaching skills
- Separate training of trainers effort that focuses on process, as opposed to content
- Follow-up coaching and problem solving for trainers after they gain experience training others
- Introduction of monitoring and evaluation techniques

The first three factors mentioned above are often considered in training programs. The last two, however, are rarely included. As a result, the long-term impacts of many high-quality training sessions fade relatively quickly. It is well known in the U.S. private corporate sector that follow-up coaching and problem solving for managers and leaders are essential to transfer what is learned in training to implementation on a regular basis.

Monitoring and evaluation are not only important for assessing program results in the re-engineered USAID environment, but also very important for allowing participants to recognize when they are succeeding and when they need to modify their activities to achieve more of the results they desire.

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Appendix A: Meeting Summaries

**ENVIRONMENTAL & OCCUPATIONAL HEALTH ACTIVITIES ASSESSMENT
MEETING SUMMARIES
October 25 – November 5, 1999**

DATE	ORGANIZATION	PARTICIPANTS	HIGHLIGHTS
10/25	MOH/Sanitary Epidemiology Service	Dr. Sergiy Berezhnov O. Radziyevska EHP Team	<ul style="list-style-type: none"> ▪ OHS has special system of surveillance; SES includes OH physicians at 10 regional clinics under auspices of IOH and OHS inspectors at the district level who inspect plants and make recommendations for improvement of OHS. ▪ Public exposure is addressed through environmental monitoring (SES sets health standards for drinking water, air, and soil); SES also monitors school children for health markers at some locations (mercury problem in Goriluuka example given). ▪ Interaction between primary care doctors is limited but when SES finds a potential problem, it will inform the clinics about a potential exposure problem. Conversely, if a primary care doctor notices unusual symptoms, he or she may ask for help from SES doctors. ▪ Health education/promotion is the responsibility of the SES health centers that exist in every district, however, they need to modify their methods to be more effective. ▪ SES is interested in helping with risk assessment, particularly identifying exposure pathways and reducing exposure to prevent chronic illnesses.
10/25	MOH/SES	OH Specialist O. Radziyevska EHP Team	<ul style="list-style-type: none"> ▪ Industries are reducing their OHS efforts due to lack of funding. ▪ SES does OHS inspections at district level and makes recommendations; industry is responsible for compliance. ▪ Some OH physicians are at local hospitals, but workers often see primary care doctors. ▪ Primary care doctors have little or no training in recognizing occupational diseases, yet workers are now more dependent on these doctors. ▪ Public hospital refers suspected occupational disease patients to a local occupational pathologist (one in each city, half-time); occupational pathologist

			<p>refers suspected case to one of 10 regional occupational health clinics.</p> <ul style="list-style-type: none"> ▪ Only OH clinics can officially diagnose an occupational disease; such diagnoses are discouraged because of the need to pay related benefits. ▪ Current system only permits surveillance for incidence (usually the late stage occurrence of an occupational disease), as opposed to a system that screens for early detection and can monitor risk factors to prevent such diseases.
10/25	Inst. Pediatrics, Obstetrics & Gynecology	Dr. Natalia Chislovska O. Radziyevska EHP Team	<ul style="list-style-type: none"> ▪ IPOG includes EH topics in epidemiological surveys of children and mothers, clinics for children and pregnant women, advanced training for doctors, and post-graduate education courses. ▪ IPOG has a joint computer & biostatistics center with the University of Chicago. ▪ IPOG implements the European Longitudinal Study of Pregnancy & Childhood (ELSPAC) as part of its Children of Ukraine program. ▪ In 1992, ELSPAC began following a cohort of 8,000 women and their newborn children as part of a seven-year program. ▪ ELSPAC is collecting data in Kiev, Mariopul, Dnieprzerzynsk, Krasny Luch, and Ivano Frankisk. Dr. Svetlana Shostak is the coordinator for the Dnieprzerzynsk ELSPAC data collection effort.
10/25	USAID	Eliot Pearlman – Health Officer	<ul style="list-style-type: none"> · Agreements reached by the Gore-Kuchma Commission will influence USAID programming. · Agreed priorities for health are <ul style="list-style-type: none"> - Analytical capabilities (data analysis for decision making and lab capacity) - Primary Health Care - Health Care Reform and Financing - MOH Reorganization · In Slovakia, Eliot worked on a program to make primary care physicians advocates for EH and to privatize primary care.
10/25	Citizens Health Network	Elena Lopantseva Zoya Drozdova EHP Team	<ul style="list-style-type: none"> ▪ Begun three years ago, has conducted 40 agribusiness-related environmental assessments (EAs). ▪ All EAs include OHS as well as environmental recommendations.

			<ul style="list-style-type: none"> ▪ Dealt with milk quality, water quality, pesticide use problems, and other issues. ▪ Experienced problems with the quality of chemical analyses of samples conducted by laboratories in the local institute. Currently the network primarily uses the Institutes of Occupational Health, EcoToxicity, and Agriculture Tech, depending on the analytes needed. ▪ Working on new project, which will be larger and longer, but without an environmental specialist, or maybe only one, and staff is worried about that.
10/25	MAMA-86	Anna Golubouska Oksana Kisselyova EHP Team	<ul style="list-style-type: none"> ▪ Work in 13 regions of Ukraine to link local and national levels. ▪ Facilitated public participation in the development of the NEHAP. ▪ Support local environmental NGOs. ▪ Instituted a “hot line” on environmental affairs and concerns; assembled a group of experts to answer questions; MAMA-86 staff convey answers back to the callers. ▪ Involved in four new water projects with the Dutch dealing with rehabilitation of water supplies and hospital water supplies. ▪ Consider primary environmental problems to be water quality, Chernobyl, waste incineration, stockpiles of pesticides, and food safety. ▪ NEHAP – related info: <ul style="list-style-type: none"> ➤ Currently on third cycle of signings with Cabinet of Ministries, needs final signature from MOH, but it will pass eventually. ➤ Regional and local EHAPs will be produced by local administrators in conjunction with NGOs. ➤ Development of the NEHAP was very collaborative. The Ukrainian Center of Scientific Hygiene provided the technical basis, led the collaborative effort that included SES and MOE input from all the oblasts, and is the best advocate for the NEHAP in Kiev. MAMA-86 held five regional workshops to get local input for the NEHAP. ➤ Will work with communities who request help and are ready. Primary limiting factor is the need to develop leadership and facilitation skills at the local levels. ➤ Inadequate laboratory analytical capabilities throughout the country will

			<p>continue to limit the NEHAP process. Independent testing is needed with an oversight committee that includes NGOs.</p> <ul style="list-style-type: none"> ➤ Nationwide Gallop Poll showed that most citizens think that drinking water quality is affecting their health. It also showed that the public highly regards SESs even though they are limited by their equipment, and that NGOs are trusted.
10/26	MOE	Anatoly Yatsyk, Deputy Minister Dan Thompson EHP Team	<ul style="list-style-type: none"> · Yatsyk recently signed a Protocol for Water and Health at the London Conference. · Yatsyk also signed 26 MOUs with Canada, USAID, and others for a variety of projects. · For follow-through, need money to carry out programs and to retrain military scientific specialists. · USAID is interested in MOE/MOH collaboration at the local level. · MOE has national plan of actions, but no money; high priorities are water and health, and transportation and health (subject of Kiev 2002 meeting). · Standards monitored by MOE are primarily environmental (ecological) health and not human health.
10/26	Ukrainian Scientific Center of Hygiene	Olga Timchenko Valery Stankevich Olga Berdik EHP Team	<ul style="list-style-type: none"> · USCH is the oldest center in Ukraine within the MOH. · Environmental hygiene and environmental health are primary functions of the center. · USCH departments include air pollution, drinking water, soil contamination, nonionizing radiation, ionizing radiation, town planning, oncology/carcinogens, public building hygiene (noise, indoor air), school hygiene, epidemiology, and environmental health. · NEHAP-related information: <ul style="list-style-type: none"> ➤ USCH, under the leadership of Olga Timchenko, wrote and compiled the technical support document for the NEHAP through a collaborative effort with more than a dozen different agencies and institutes, including oblast representatives. Document is entitled “Environment and Health of the Ukrainian Population – Report to the Environmental Health Action Plan,

			<p>Kiev – 1998.”</p> <ul style="list-style-type: none"> ➤ USCH also led the collaborative effort, with the help of MAMA-86, which resulted in the development of the NEHAP of Ukraine 1999-2005. Olga Timchenko provided much of the technical leadership for this effort. ➤ The NEHAP was presented at the London Public Health Conference in June 1999. ➤ USCH is already working on a format for local EHAPs and has agreements with the Ministry of Transportation and others for local level actions. ➤ Olga Timchenko is also in the process of creating a birth defects registry for Kiev and three other oblasts. She feels there is enough good environmental data from Chernivetska, Kiev, and Ivano-Frankivska (from SES, industry, institutes, Hydromet, and MOE) to compare with registry data. ➤ USCH has been conducting environmental epidemiological investigations for many years, but it has been limited by its level of training in environmental epidemiology as well as its ability to analyze environmental samples for contaminant levels.
10/26	Institute of Occupational Health (IOH)	Prof. Yuri Kundiev, Director EHP Team	<ul style="list-style-type: none"> · There are four IOHs in Ukraine (Kiev, Kharkiv, Donetsk, Kiry Rog) and 10 occupational disease clinics (80 beds/clinic), employing a total of approximately 300 people, under the Ukraine Academy of Medical Science. The MOH/SES conducts plant OHS inspections and makes recommendations. · Ten years ago the system was fairly effective for workers. Though early screening methods were not up to date, industries paid for annual worker exams and each plant employed a labor hygienist. Now, annual worker exams are infrequent, occupational diseases are not diagnosed until gross symptoms appear and rehabilitation is often impossible, and the whole OHS system has little experience with smaller, private sector businesses. · In addition, the official diagnosis and reporting of occupational diseases is severely hampered by the compensation system. Workers who receive an official diagnosis of an occupational disease are then entitled to a costly compensation package that the government cannot currently afford. Thus, there are numerous barriers to receiving an official diagnosis for an occupational

			<p>disease. Kundiev estimates that the current large compensation costs are six times higher than what it would cost to protect workers or treat them at earlier stages.</p> <ul style="list-style-type: none"> · The International Labor Office in Geneva estimates that globally, 4% of cancer is occupationally related. Kundiev estimates that this would translate to 12,000 cases/year in Ukraine, but only 50/year are reported, for reasons described above. · Kundiev wants to change the function of the IOHs from conducting academic research to the following: <ul style="list-style-type: none"> ➤ Conducting training in OHS for primary care physicians (who are now the front line health resource for workers), SES inspectors, plant managers, and plant engineers ➤ Providing earlier problem identification and preventive actions by means of a more efficient and timely reporting system (updated, computerized occupational disease registry) ➤ Conducting epidemiological research · In addition, new legislation is needed to deal with private sector businesses, employer responsibilities regarding OHS, and the role of SES (<i>Note: the June 22, 1999 Resolution of the Cabinet of Ministries regarding roles and responsibilities of the SES confirms that the SES has jurisdiction over “the owners of enterprises, agencies and organisations of all forms of ownership or their designees...”</i>) · Kundiev estimates that increased respiratory protection is the greatest occupational disease prevention need, especially for coal miners.
10/26	City of Kiev Commission on Environmental Protection of Population from Environmental	Approximately 15 participants including Chief Sanitary Doctor, Senior Kiev Vodokanal	<ul style="list-style-type: none"> · Kiev Council and Commission, along with SES, Transportation, Green Organization, and others have studied Kiev’s drinking water problems and policies for 1 ½ years. In July 1999, the Council adopted the first city regulatory policy in Ukraine for protection of the environment (1999-2002). More than 50 institutions, enterprises, NGOs, and agencies took part in the development of this policy and associated program. The goal is clean water to improve the

	Health Effects	<p>Engineer, Chief of Vodokanal (Vladimir Bilyk), President of Kiev Commission, Secretary of Kiev Ecological Commission, Ukrainian Parliament Committee on Problems of Environmental Policy...(Valentina Pidlisnyuk), University of Kiev – Mohyla Academy (Mykhaylo Bryk)</p>	<p>health of the population.</p> <ul style="list-style-type: none"> · Lengthy discussion have occurred regarding surface and groundwater sources of water for Kiev and how these are “balanced” to reduce treatment costs. Actual water “problems” cited were not toxic but related to summer eutrophication in the Dniepro River and high TOC levels that required increased coagulation and flocculation treatment. Artesian groundwater wells have been installed at several locations within the city to provide drinking water alternatives for citizens. · Vodokanal labs were said to perform 8,000 analyses annually to monitor drinking water standards for bacteria, radionuclides, and chemical substances, but no toxic substances were cited as being a problem. It was stated that SES provides QA/QC for vodokanal analyses. There was some concern expressed regarding the generation of chlorination byproducts, total halomethanes (THMs), but no data were cited. · The University of Kiev – Mohyla Academy, Ecological Research Center, conducted a citizen survey that discovered citizens are not worried about health effects from groundwater wells and that one-third of Kiev consumes water directly from the tap, with some use of filters at the point of use. · The Council and the Commission want to give people the right to choose their drinking water source and would like some help in how to disseminate useful information to the public.
10/27	Cherkassy Oblast Regional SES Center	<p>Vitaliy Samotuga, Chief Sanitary Doctor, Cherkassy SES chaired the meeting, which included the primary health care administrator. O. Radziyevska</p>	<ul style="list-style-type: none"> · Cherkassy has five urban and 20 rural SESs with a total of about 2000 employees. · Each of the SESs has both an occupational health inspector and PH doctor. · Each SES also has a lab and “assessors” for water, food/nutrition and health. · MOE only has capacity and a lab at the oblast level; some of their environmental monitoring responsibilities overlap · Primary function of SES is to accumulate data (Hydramet, Ecol. Safety), analyze and interpret data, and provide recommendations for protecting health. · SES alone analyzes about 80,000 samples/yr (460 parameters). Certified by

		EHP Team	<p>MOH for air, water, soil, and food.</p> <ul style="list-style-type: none"> • SES OHS inspectors cover both public and private sector enterprises. Their inspections result in OHS, engineering, and hygiene recommendations. Enterprises are given six months to comply. • Oblast SES Health Center organizes seminars for health education, provides lectures and writes newspaper articles and radio announcements, and conducts school visits. Topics are water, air, and soil quality; toxic waste; occupational health. There are 25 sanitary instructors in this oblast. • Primary care physicians are not sensitive to illnesses related to environmental exposures, but they do meet once per month to study with specialists. • Respiratory problems in children are very high here (highest rate in Ukraine) and seem to persist regardless of reductions in contamination. Other factors contributing to respiratory disease morbidity and cancer rates in children are also high. • Needs include more information from research institutes, better lab capabilities, more training in prevention measures, and computer/GIS capability to map environmental factors and disease.
10/27	Cherkassy Polytechnic University	Same as above + several other professors (Dr. Demianuk), colleagues, and students	<ul style="list-style-type: none"> • The partnership between SES and the Ecology Dept. is unique. The department has agreed to train SES workers in “ecological processes” that relate to pollution, human health, and occupational health. • Disciplines within the Ecology Department include humanitarian/social, occupational, pollution, and statistics. Students can become general ecologists or technological ecologists (takes five years). Technological ecologists focus on food and chemical industries and study ecological effects of pesticides, fertilizers, radiation, heavy metals, and so forth.
10/27	Cherkassy District SES	Vitaliy Samotuga, Chief Sanitary Doctor, Cherkassy Oblast SES + district staff.	<ul style="list-style-type: none"> • This district SES with 68 staff serves 84,500 people. Sixteen of the staff have higher education degrees. • Laboratories conduct water, soil, food, and air sample analyses. • Two common problems are elevated organochlorine pesticide values in ambient as well as occupational environments, and elevated iron in groundwater used for

		O. Radziyevska EHP Team	<p>drinking. Anemia is a problem in children even though the groundwater has high iron concentrations</p> <ul style="list-style-type: none"> • SES OHS inspections occur about once a year for both public and private enterprises, with quarterly inspections for large industries. Companies are cited for problems and SES sends a protocol on how to fix the problems. Companies have six months to comply. Enforcement tools include fines and referral to the State Center on Health Surveillance who also have enforcement authority. We were told informally, however, that enforcement is seldom followed through due to economic and political pressures • SES has one occupational doctor per 1,300 workers. If an occupational disease is diagnosed, the regional IOH is sent a description of the disease and the workers environmental conditions, but they seldom hear anything back from the regional IOH.
10/27	U.S. Peace Corps Cherkassy Regional Office	Peace Corps Staff O. Radziyevska EHP Team	<ul style="list-style-type: none"> • Three major projects are TEFL, business development, and environment. • Environment Program has an environmental education focus and includes Nature Centers (Young Naturalist Centers). • Environmental education work includes work with NGOs, WWF, schools, city administrators, and UNDP. • One of the new projects is health education. A Ukrainian network of Health Education Centers (SES Health Centers?) may get PCVs.
10/27	Cherkassy Regional Municipal Partnerships Training Center (USAID sponsored)	Gencydy Linevych, Director O. Radziyevska EHP Team	<ul style="list-style-type: none"> • Involves 18 Ukrainian/American partnerships. • Includes four Regional Training Centers (Lviv, Cherkassy, Donetsk, and ----?). • Cherkassy region partnerships include Des Moines, Iowa; Ithaca, N.Y.; Richland, Wash.; and Springfield, Ill. • Training program currently sponsors seminars with specialists from the United States and Ukraine to aid Ukrainian cities in strategic planning. Seminars include the following topics: <ul style="list-style-type: none"> - Local economic development - Local budget and finance - Communal services/housing

			<ul style="list-style-type: none"> - City transport - Citizen participation <ul style="list-style-type: none"> · Clearly the EH topics could be added and LEHAPS could be a focus for citizen participation seminars. · U.S. partners are responsible for helping answer questions and solve problems – and may have future agreements.
10/28	Dnieprozerzhinsk SES-guided industry visit to cement plant	SES/Cement Plant Reps O. Radziyevska EHP Team	<ul style="list-style-type: none"> · Population of Dnieprozerzhinsk is 300,000, with six large industries: two metallurgical (pig iron +?), two chemical (fertilizer, nitrogen), and two others (cement +?). · Cement plant has 850 workers and produces 900 thousand tons/yr. · They are “moving towards” privatization and have had visits from 10 foreign delegations here. · There is no demand for waste concrete, only portland cement; H2S waste is used. · They have a 24-hour medical unit with a primary health care doctor and a dentist on call, coordinated with a local hospital. · Workers receive OHS training, including training in respiratory protection, and annual complete medical exams. · There is an occupational safety unit that monitors the work place and suggests improvements. SES also inspects and provides recommendations. · It may be that many of the above procedures and improvements have been in response to questions raised by foreign delegations. · They now have a limited joint venture (could not tell us with whom) that has enabled them to achieve some emission reductions, but they will need foreign investment to accomplish more. They have submitted three proposals to EBRD. · They are worried because some foreign “investors” have bought plants and then simply destroyed them to prevent competition.
10/27	Dnieprozerzhinsk SES Lunch Meeting	Dr. Svetlana Shostak, City SES Director	<ul style="list-style-type: none"> · Dr. Shostak directs the Dnieprozerzhinsk ELSPAC study. · Air pollution is a concern here because of dust from industrial emissions (cement & coal/chemical industries).

		O. Radziyevska EHP Team	<ul style="list-style-type: none"> · According to the City Health Administrator, child respiratory disease (obstructive bronchitis and allergies) and prenatal hypoxia are two major problems. · Seventy percent of women here work in industries.
10/29	EU/TACIS	Ties van Kempen (also previous EPT Regional Director for Ukraine, Belarus and Moldova)	<ul style="list-style-type: none"> · TACIS is working on strengthening the MOE Inspectorates. · There is not a direct connection between the National and Oblast Inspectorates. · The Oblast Inspectorates are very political and not as effective as they might appear. The fine system is a good example. Fines are imposed on plant directors personally (who are poorly paid), and if the fine is not paid in three months, it is waived. · Basically, the government is very reluctant to shut down enterprises. Pollution has been reduced simply because plants are only operating at about 30% of their capacity. · Many ministries have opportunities and authorities to enforce environmental laws but they don't. · TACIS is trying to change the overall national structure and reporting scheme to manage hazardous waste from cradle to grave to harmonize with EU and as a precursor to inclusion in the EU. Aspects of TACIS program include integrating pollution prevention and control with permit system; improving standard laboratory capacities, methods, and QA/QC (norms for 1200 parameters but MOE only tests for 10); cost of environmental controls included in cost of product; improved information management, etc. · Major problem is the disconnect between the national and oblast levels. The oblasts want pollution fees, not pollution reduction. Also various donors working at the oblast level are taking inconsistent approaches. More coordination is needed between donors. · TACIS is also working on environmental communication strategy. Ukraine's

			<p>1992 Law on Information, plus the fact that Ukraine signed the Aarhus Convention, means that the public should have access to industrial permit conditions within 10 days of final permit (Health Centers should also get info)</p> <ul style="list-style-type: none"> • Pressure on Parliament and Cabinet of Ministers Resolutions are an effective way to influence MOE, especially for topics other than nuclear safety (MOE's primary concern) • Important to note that climate change emission credits are based on 1990-91 levels and, since Ukraine is only emitting 30% of 1990-91 levels, there is money to be made in selling credits
10/29	ISAR	Irina Belashova Schelene Smith EHP Team	<ul style="list-style-type: none"> • This year they sponsored an environmental health activists activity within their Women in Environment program; included EH activists from Moldova, Belarus, and Ukraine. They selected EH because the problems are not getting enough visibility. • ISAR is committed to supporting very grassroots NGOs (grants average \$3K). • One example is the "Golden Water" Project in uranium mining area (Dniepropetrovsk oblast). Company stopped controlling waste; local group collected health and environmental data to document what was happening; has some help from a U.S. activist (Linda King). • ISAR has nine regional support centers. • An EH grants program and training are needed to increase the sophistication with which local groups can deal with EH issues.
10/29	State Commission on Housing and Municipal Economy	Alexander Milner, Water Supply and Sewage Service Department Head EHP Team	<ul style="list-style-type: none"> • About 30% of the drinking water supply is from groundwater. Milner mentioned a few quality problems in some areas related to iron (Kiev), fluoride (Poltavska Region), nitrates/ammonia (Khmelnitska (?)), and salinity and calcium in coal mining areas. He feels that groundwater quality is basically good and that groundwater should be seen as a strategic reserve. • About 70% of the drinking water supply is from the Dniepr River. Problems with water quality are color (tannic acid?), low oxygen, high nitrogen and phosphorous, high sewage-related bacterial load, and eutrophication. • Toxics were not cited, but industries have no pretreatment and treatment plants

			<p>that are equipped to handle metals, pesticides, etc.</p> <ul style="list-style-type: none"> · Vodokanals analyze water every day (SESs tests weekly); nationwide about 100,000 analyses/day · Can't test for all the norms, however. Don't have adequate equipment or training
10/29	USAID Municipal Partnerships Program	Judy Hansen Pat Billig	<ul style="list-style-type: none"> · Welcomes cross-connections with other USAID activities because local governments, to be effective, have to deal with many social and technical issues; vodokanals are of great public interest now due to water quantity and quality concerns; community participation skills needed for municipalities and NGOs. · Regional Training Centers are for all cities in the region, not just those with partnerships, and could use help with curriculum. · USAID Project with the Design Institute in Lviv is a good model. Design Institute has received technical and financial training to take on a semi-private consulting role. The Department Chair of the State Committee for Construction, Architecture and Housing (Design Institutes are under this committee) is very supportive of this project. · Komsomolsk Mayor paired with Ithaca due to similar water quality problems; risk perception and risk communication are linked to analytical needs.
10/30	USCH 2 nd meeting	Olga Timchenko Olga Bierek Pat Billig Janelle Daane	<ul style="list-style-type: none"> · Timchenko considers primary EH problems to be the following: industry air emissions, OHS, bacterial contamination of drinking water, nutrition, smoking/alcohol, and primary care availability. Other potential problems are unknown due to inadequate laboratory capacity. · Timchenko sees an immediate need for both an occupational disease registry and a birth defects registry to be able to understand current health issues and interventions needed. · USCH has about 175 professionals and acts as a training center now for SES oblast specialists, especially laboratory analytical training. · Next step for NEHAP lies with the 26 oblast sanitary (public health) doctors and

			<p>the 26 MOE inspectors working together with Timchenko. She has already received proposals from most of them, no joint ones though. Development and implementation of LEHAPS will require:</p> <ul style="list-style-type: none"> - Elaboration by local municipalities, SES, MOE, NGOs. and the public - Risk assessment training for both professionals and the public - Facilitation of public participation opportunities and community training - Limitations are analytical, both laboratory (equipment and methods) and data (environmental epidemiology) - Better health promotion programs for smoking, alcohol, and nutrition, i.e., domestic health. Should come from Health Centers; no such programs available now <ul style="list-style-type: none"> · USCH Departments now include: <ul style="list-style-type: none"> - Air pollution - Drinking water - Soil pollution - Ionizing radiation - Nonionizing radiation - Oncology/carcinogens - Noise, indoor air, public bldgs - School hygiene - Epidemiology - Environmental health · Although there are some “paper” disease registries, none are really functional or usable. Need to be computerized along with training for using consistent diagnoses and reporting, as well as using a computerized system.
11/1	US Peace Corps	Victor Karamushka (previously with MOE and part of the NEHAP committee)	<ul style="list-style-type: none"> · Victor was in the Dept. of Environmental Policy at MOE and feels there is little understanding of EH at MOE. · EH Policy Formulation is now beginning to have a basis in international agreements and conventions, national laws and resolutions, and documents. · Important international agreements include the Water and Health Protocol signed by MOE Dep. Minister Yatsyk and the June 1999 London Conference and the Aarhus Convention. · The most important national document right now is the NEHAP. Implementation of the NEHAP needs to be supported. · Also very important for Ukraine is the 2002 Kiev Convention (follow up to Rio

			<p>1992 and Aarhus 1998) where the protocol on environment, health, and transportation will be officially signed.</p> <ul style="list-style-type: none"> · Need scientific support and training for LEHAPs at local levels for: <ul style="list-style-type: none"> - Risk assessment and risk factor ID - Economic links to EH and OHS (productivity) - Reforms in monitoring systems (analytical capability for toxics) - Environmental health education and increased community awareness - Management of air quality, food quality, and solid waste - The working together of MOE and MOH at local levels · Training needs to include all sectors (industry, municipalities, NGOs, MOE, MOH, schools, etc.). · Need some successful LEHAP demonstration sites that involve leaders from other sites in order to have scale up. · Peace Corps can help with environmental education.
11/1	PPMP (Joint EPA/UNDP Project)	Zoya Soloviova EHP Team	<ul style="list-style-type: none"> · Zoya works for UNDP; Project due to finish in April 2000. · Program seems to be seminar focused; eight seminars have been completed, two more will be done; topics include analytical chemistry, ISO standards, measuring residuals, integrated pest management, and how Plant Protection Stations (there is one in each oblast) can be more effective in communities. · There has also been support for production and dissemination of information. · There has been no monitoring and evaluation to look at community impacts of program.
11/1	Center on Health Surveillance	Deputy Director Jacob Derevyanko EHP Team	<ul style="list-style-type: none"> · This center summarizes health and environment information received from the oblasts. They publish morbidity data and chemical data. They would do registries but they do not have money for programs, only for salaries. · Center also <ul style="list-style-type: none"> - Issues guidance for new standards, such as new drinking water standards - Conducts laboratory accreditation for SES - Publishes methods and guidance documents for SES - Supervises and inspects SES and provides recommendations

			<ul style="list-style-type: none"> · One of the most important roles is providing SES and other ministries with enforcement authority for standards and norms, including: <ul style="list-style-type: none"> - Penalties and fines - Temporary shut downs - Permanent closing of facilities - Litigation · Have GIS capabilities and often map environmental and disease data; they summarize SES information and USCH investigations from 22 areas.
11/2	World Bank	Yelena G. Fadeyeva Social Sector Officer EHP Team	<ul style="list-style-type: none"> · Municipal Development Loan Fund is under preparation and will not be available until 2001-2002. · WB experience with the health sector is not good. Health Sector Project started in 1993 was stalled for three years (after 1 ½ years) because Ukraine did not meet WB's requirements for procurement of commodities and consultants. · New MOH minister, as of February 1999, is more progressive and has requested assistance for a TB/AIDS Prevention Project and a Health Sector Management and Information System Project. · A WB health sector evaluation team recommended improvements in health sector management and financial assistance for a pilot information system.
11/3	World Bank	Andrei Mikhnev Private Sector Development Officer, Pat Billig, & Leonard Dobrovolsky	<ul style="list-style-type: none"> · Attractiveness of Ukraine for foreign investment is very low because of corruption, high taxes, and frequently changing regulations. · Once these macro-level conditions are improved, improving work place standards/OHS and reducing discharges to the environment will become more important issues and will influence foreign investment.

Appendix B: Cabinet of Ministers Resolution “On Approval of Regulation on State Sanitary and Epidemiological Surveillance in Ukraine” - June 22, 1999

This translation from Ukrainian has been prepared by DHV Consultants BV, as part of the EU-Tacis Project on Strengthening the State Environmental Inspectorate of Ukraine, with the intent of providing information to the public on Ukraine’s environmental statutes, policies, and procedures. No liability is accepted by DHV, or its employees or subcontractors, for any misunderstanding of Ukrainian Law that may result from the use of this translation.

CABINET OF MINISTERS OF UKRAINE

RESOLUTION

No. 1109 of 22 June 1999

Kyiv

On Approval of Regulation on State Sanitary and Epidemiological Surveillance in Ukraine

In accordance with Article 31 of the Law of Ukraine "On Ensuring Sanitary and Epidemiological Welfare of Population" (4004-12), the Cabinet of Ministers of Ukraine RESOLVES:

1. The "Regulation on State Sanitary and Epidemiological Surveillance in Ukraine" (attached) is hereby approved.
2. Normative and regulative acts as issued by the Chief State Sanitary Doctor of Ukraine within his/her scope of competence shall be obligatory for execution by central and local bodies of executive power, authorities of local self-government, as well as by enterprises, institutions, organisations of all forms of ownership, and by officials and citizens.
3. The Ministry of Health Protection, as well as the Ministry of Defence, the Ministry of Internal Affairs, the State Committee on Guardianship of State Borders, the General Department of National Guard Commander and the Security Service shall, with the endorsement of the Ministry of Health Protection, develop and adopt within three months a regulation on state sanitary and epidemiological service which is part of these central bodies of executive power.

Prime-Minister of Ukraine

V. PUSTOVOITENKO

APPROVED

By the Cabinet of Ministers of Ukraine Resolution
Of 22 June 1999 No. 1109

REGULATION
On State Sanitary and Epidemiological Surveillance in Ukraine

1. This Regulation defines main objectives and procedure of conducting the State sanitary and epidemiological surveillance in Ukraine, as well as regulates major issues of operation of the State Sanitary and Epidemiological Service in regard to this surveillance.
2. In this Regulation, the definition of the "State sanitary and epidemiological surveillance", "sanitary legislation", and "dangerous factor" is the same as in the Law of Ukraine "On Ensuring Sanitary and Epidemiological Welfare of Population".
3. Main objectives of the State sanitary and epidemiological surveillance are as follows:
 - Monitoring the organisation and implementation of the sanitary and anti-epidemic measures by bodies of executive power and local self-government authorities, as well as by enterprises, institutions, organisations and citizens
 - Monitoring the implementation of state policy for impediment of illnesses among population, participation in the development and control over implementation of programmes for preventing harmful impact of dangerous environmental factors and poor work conditions on human health
 - Monitoring the compliance with sanitary legislation
 - Monitoring the implementation of instructions and orders from the State Sanitary and Epidemiological Service's officials
 - Performing the State sanitary and epidemiological examination (expertise), issuance of conclusions and permits for conducting activities outlined by the Law of Ukraine "On Ensuring Sanitary and Epidemiological Welfare of Population"
 - Conducting the hygienic assessment of any dangerous physical, chemical, or biological factors in human environment, in order to determine the criteria for their permissible level of impact on human health.
4. The State sanitary and epidemiological surveillance shall be conducted by the following organisations:
 - a) agencies and institutions of the State Sanitary and Epidemiological Service within the Ministry of Health Protection (MHP) system:

- Main Sanitary and Epidemiological Department of the MHP
 - The MHP Department of Medical Consequences from the Chornobyl Nuclear Power Plant (NPP) Accident
 - Central Sanitary and Epidemiological Station of the MHP
 - The Republic of Krym Sanitary and Epidemiological Station
 - Oblast, city, rayon, and rayon of cities sanitary and epidemiological stations, and disinfecting stations
 - Central Sanitary and Epidemiological Station of Railway Transportation System, sanitary and epidemiological stations on railways, linear sanitary and epidemiological stations on railways
 - Central Sanitary and Epidemiological Station of Air Transportation System
 - Central Sanitary and Epidemiological Station of Water Transportation System, sanitary and epidemiological stations in river basins and in ports
 - Sanitary quarantine units
 - Specialised institutions and organisations of the MHP for dealing with especially dangerous infections
 - Sanitary and epidemiological stations on objects with specific operating mode
- b) relevant institutions, organisations, regiments and units of the State Sanitary and Epidemiological Services of the Ministry of Defence, the Ministry of Internal Affairs, the State Committee on Guardianship of State Borders, the Main Department of the National Guard Commander, the Security Service of Ukraine, which are responsible, in accordance with the existing legislation, for conducting the State sanitary and epidemiological surveillance in their defined territories, objects, regiments and units, and which conduct the State sanitary and epidemiological surveillance in accordance with this Regulation and regulations on the State sanitary and epidemiological services of the relevant central bodies of executive power.

Institutions and organisations of the State Sanitary and Epidemiological Service shall be subject to certification, which is to be conducted in accordance with the procedure established by the Chief State Sanitary Doctor of Ukraine.

5. The State Sanitary and Epidemiological Service of Ukraine shall be chaired by the Chief State Sanitary Doctor of Ukraine, who is also the First Deputy Minister of Health Protection, and who shall be appointed or dismissed in accordance with the legislation, and shall report directly

to the Cabinet of Ministers of Ukraine on the issues related to State sanitary and epidemiological surveillance.

6. The Chief State Sanitary Doctor of Ukraine shall:

- Ensure compliance with the requirements concerning implementation of the State sanitary and epidemiological surveillance on the territory of Ukraine
- Set forth a list, structures and responsibilities of institutions and organisations of the State Sanitary and Epidemiological Service within the MHP system, and approve the lists, structures and responsibilities of institutions and organisations of the State Sanitary and Epidemiological Services of the Ministry of Defence, the Ministry of Internal Affairs, the State Committee on Guardianship of State Borders, the Main Department of the National Guard Commander, the Security Service of Ukraine, and resolve matters related to their organisation and operation
- Issue orders dealing with the operation of the State Sanitary and Epidemiological Service, resolutions, requests and other instructive documents, as well as submit proposals (requests) concerning organisation and implementation of the State sanitary and epidemiological surveillance in Ukraine
- Represent interests of the State Sanitary and Epidemiological Service on enterprises, at institutions and organisations of all forms of ownership, in court, and in arbitration court
- Make arrangements for learning and evaluation of the world experience, take part (in accordance with the established procedure) in preparation and implementation of international projects, programmes, treaties with the relevant governmental and non-governmental organisations of other countries, and work closely with the WHO, Commission on Alimentarius Code, FAO, UNEP, ILO, and other international organisations on the matters that belong to his/her competence
- Take part in formulating the state policy in the area of health protection, prepare drafts of legislative and other normative acts concerning sanitary and epidemiological welfare of the population
- Submit proposals for ensuring the sanitary and epidemiological welfare of the population for review to the Cabinet of Ministers of Ukraine
- Directly inform the Cabinet of Ministers of Ukraine on the sanitary and epidemiological situation in Ukraine and its regions, on the cases of extremely dangerous infectious diseases, poisonings, radioactive irradiation, occupational diseases, and on other matters that belong to his/her area of expertise
- Provide for implementation of orders from the President of Ukraine, the Verkhovna Rada of Ukraine, and the Cabinet of Ministers of Ukraine on the matters of the State sanitary and epidemiological surveillance in Ukraine.

7. The Chief State Sanitary Doctor of Ukraine shall have the First Deputy and four Deputies, to whom he/she can delegate some of his/her authorities.

The First deputy and the deputies of the Chief State Sanitary Doctor of Ukraine shall be appointed or dismissed by the Cabinet of Ministers of Ukraine, upon the relevant recommendations of the Chief State Sanitary Doctor of Ukraine.

8. To ensure scientific and methodological support of the sanitary and epidemiological service, and to ensure implementation of governmental programme of the scientific experimental research works, the Chief State Sanitary Doctor of Ukraine shall form the Scientific Council, as a consulting and advisory body, which shall embrace the leading scientists and professionals of hygienic and epidemiological background. The Chief State Sanitary Doctor of Ukraine shall approve regulation on the Scientific Council.

9. For the review and consideration of the most important issues of the State Sanitary and Epidemic Service, a Collegium of the State Sanitary and Epidemiological Service shall be established, which should include the Chief State Sanitary Doctor of Ukraine, his/her Deputies, and other officials of the State Sanitary and Epidemiological Service.

The Collegium shall be chaired, and its Regulation content approved by, the Chief State Sanitary Doctor of Ukraine.

10. The State Sanitary and Epidemiological Service of the Autonomous Republic of Krym shall be managed by the Chief State Sanitary Doctor of the Autonomous Republic of Krym, who shall ex-officio be a Deputy Minister of Health Protection of the Autonomous Republic of Krym, and who shall be appointed or dismissed by the Chief State Sanitary Doctor of Ukraine, with the approval of the Council of Ministers of the Autonomous Republic of Krym.

11. The State Sanitary and Epidemiological Services of oblasts, the cities of Kyiv and Sevastopol shall be managed by the chief state sanitary doctors of oblasts and the cities of Kyiv and Sevastopol, correspondingly, who shall be appointed or dismissed by the Chief State Sanitary Doctor of Ukraine, with the approval of the relevant oblast, and the cities of Kyiv and Sevastopol, administrations.

12. The State Sanitary and Epidemiological Services of rayons, cities, and rayons of cities shall be managed by the relevant chief sanitary doctors of rayons, cities, and rayons of cities, who shall be appointed or dismissed by, correspondingly, the chief state sanitary doctors of the Autonomous Republic of Krym, oblasts, the cities of Kyiv and Sevastopol, and of cities which are divided into rayons.

13. The State Sanitary and Epidemiological Services on water, railway and air transportation systems shall be managed by, correspondingly, the chief state sanitary doctors of water, railway, and air transportation systems, who shall be appointed or dismissed by the Chief State Sanitary Doctor of Ukraine.

14. The state sanitary services of the objects with specific operating mode shall be managed by the chief state sanitary doctors of these objects, who shall be appointed or dismissed by the Chief State Sanitary Doctor of Ukraine.

15. The chief state sanitary doctors identified in paragraphs 10 through 14 of this Regulation, shall also be chief doctors of corresponding sanitary and epidemiological stations, ex-officio.

16. The State Sanitary and Epidemiological Services of the Ministry of Defence, the Ministry of Internal Affairs, the State Committee on Guardianship of State Borders, the Main Department of the National Guard Commander, and of the Security Service of Ukraine shall be managed by the chief sanitary doctors of these central bodies of executive power, who shall be appointed or dismissed by the managers of the relevant central bodies of executive power, with the approval of the Chief State Sanitary Doctor of Ukraine. The chief state sanitary doctors of the Ministry of Defence, the Ministry of Internal Affairs, the State Committee on Guardianship of State Borders, the Main Department of the National Guard Commander, and the Security Service of Ukraine shall report directly to the managers of the relevant central bodies of executive power. However, with regards to the issues of the State sanitary and epidemiological surveillance they shall report to the Chief State Sanitary Doctor of Ukraine, in accordance with legislation.

The chief state sanitary doctors of territories, institutions, organisations, regiments, and units subordinated to the above listed central bodies of executive power shall be appointed or dismissed in accordance with the legislation.

17. Officials of the State Sanitary and Epidemiological Service within the MHP system shall carry their duties within the borders of the relevant administrative territories and on the objects of their surveillance, while the officials of the State Sanitary and Epidemiological Services of other central bodies of executive power shall carry their duties on their territories and on the objects of surveillance, as well as in their departments and institutions.

18. The chief state sanitary doctors, their deputies, and other officials and specialists of the State Sanitary and Epidemiological Service shall be subject to certification, which is to be conducted in accordance with the procedure established by the Chief State Sanitary Doctor of Ukraine.

19. The chief state sanitary doctors of the Autonomous Republic of Krym, oblasts, the cities of Kyiv and Sevastopol, rayons, cities, rayons of cities and their deputies, the chief state sanitary doctors of water, railway and air transportation systems and their deputies, as well as the chief state sanitary doctors of objects with specific operating mode, within the borders of the relevant administrative territories and the surveillance objects, shall have the following rights:

1) To undertake surveillance over observance of the sanitary legislation by bodies of executive power and authorities of local self-government, by enterprises, institutions, organisations and citizens, as well as to conduct control over implementation of sanitary and anti-epidemic actions, and completion of the programme on impediment of illnesses and health protection of the population;

2) To investigate causes and circumstances for the emergence of occupational and infectious diseases, as well as of poisonings and radioactive incidents;

3) To obtain information, materials and documents, statistical and other data, characterising the sanitary, hygienic and epidemiological state of objects as well as on public health situation, from legal entities and from citizens, including foreigners, residing or working on the territory of Ukraine;

4) To assign the State sanitary and hygienic expertise and, where necessary, to determine the content of the commission performing such expertise;

5) To review and endorse the following:

- drafts of the local programs for social, economic and cultural development;
- schemes of pre-project documentation, related to regional planning and construction of residential areas, resorts, etc.;
- documents whereby the land is appropriated for construction and other types of land use, water abstraction and wastewater discharge sites, as well as for allocation of industrial and other facilities;
- project and technical documentation for construction, reconstruction, putting into operation of new and reconstructed objects of industrial, social, cultural and other purposes;
- documentation for development, production and operation of new machines, mechanisms, equipment, other means of production, new technologies, industrial processes;

6) To determine the need for preventive vaccinations and other types of preventive measures in cases when there is a threat of emergence of epidemics, mass poisonings and exposure to radiation;

7) To require execution of medical examinations, regulated by the Ministry of Health Protection, in accordance with the existing legislation;

8) To conduct inspections of objects and buildings and to make conclusions on their compliance with the requirements of sanitary regulations;

9) To approve conclusions of the State sanitary and hygienic expertise;

10) To issue permits for:

- import of raw materials, products (goods, equipment, processing lines, etc.), their realisation and utilisation in Ukraine;

- development and production of new types of foodstuffs, implementation of new technological processes of production and processing of new types of materials, contacting with food raw materials or foodstuffs in process of their production, storage, transportation or realisation;
- performance of diagnostic, experimental, research, testing or measurement activities at enterprises, agencies and organisations of all forms of ownership, if their activities are related to utilisation of biological agents, chemical raw materials, products and substances with sources of ionising and non-ionising radiation and radioactive substances, including permits for working with agents of I – IV groups of pathogeneity (hazard), toxins or materials, which can contain such agents, molecules of recombinant DNA, as well as for performing the quality and safety control of products, produced by such enterprises and organisations;
- production, storage, transportation, use, burial, destruction and utilisation of poisonous substances, including toxic industrial waste, biotechnological products and other biological agents;
- transit transportation of chemical, biological, radioactive and other harmful for public health types of raw materials, mineral resources, substances and materials (including petroleum and petroleum products, natural gas) through the territory of Ukraine;
- production, processing and realisation of foodstuffs, items of hygiene and sanitary, perfumes and cosmetics, alcoholic beverages, tobacco, household chemicals and children goods;
- production of medication, medical immunobiological compounds;
- special water use;
- provision of communal and medical services for the public, education of children and teenagers;
- other types of activities, permits for which are to be issued by the State Sanitary and Epidemiological Service, as provided by the legislation;

11) To enter, by showing their employment certificate, the territory and buildings which are subject of the State sanitary and epidemiological surveillance;

12) To take free of charge samples of raw materials, products and materials for the purposes of the State sanitary and hygienic expertise and laboratory examinations (provided the Inspection Protocol or the Protocol of violations of the sanitary legislation is issued);

13) To make proposals concerning elimination of sanitary legislation violations, which shall be obligatory for execution, to call in violators of the sanitary legislation, according to the established procedure, and to obtain explanations from them;

14) To issue resolutions on imposition of fines and application of financial sanctions for violation of the sanitary legislation;

15) To perform the following, according to the procedures, established by the Chief State Sanitary Doctor of Ukraine:

a) to record the acts of the sanitary legislation violations;

b) to issue resolutions, orders, as well as to make proposals (petitions) in regard to the following:

- to owners of enterprises, agencies and organisations of all forms of ownership or their designees – on suspension from any types of activities, work, education, pre-school establishments of persons that are ill with infectious diseases or transmitters of agents of infectious diseases or that contacted with such ill persons, as well as of those individuals who avoid the obligatory medical examination or vaccination against infections, which are listed by the Ministry of Health Protection;

- on bringing the normative technical, instructive and other documents of the State and public authorities and their officials into compliance with requirements of the sanitary legislation;

- on limiting the activities of objects of the State sanitary and epidemiological surveillance in case of detection of violations of the sanitary legislation, that have no direct adverse impact on public health but can stipulate such adverse influences;

c) to issue resolutions on the following:

- temporary prohibition or cessation of activity of an object of the State sanitary surveillance in case if violations of the sanitary legislation are identified which can adversely influence public health, where those violations can be corrected through appropriate action;

- prohibition or cessation of activity of an object of the State sanitary surveillance in case of detection of violations of the sanitary legislation that can adversely influence public health, where those violations can not be corrected through appropriate action;

d) to make proposals (petitions) to the executive authorities and authorities of local self-government regarding introduction of special conditions and regime of work, education, migration and transportation, aimed at prevention and elimination of an illness, on certain territories or objects of surveillance;

16) To cancel decisions of the Chief Sanitary Doctors of the lower levels or of the officials from the State Sanitary and Epidemiological Service.

20. The Chief Sanitary Doctors of the Ministry of Defence, the Ministry of Internal Affairs, the State Committee on Guardianship of the State Borders, the General Department of

the National Guard Commander, the Security Service of Ukraine, as well as their Deputies shall have the rights, provided for by Paragraph 19 of this Regulation, within the territories and objects of surveillance under their jurisdiction, as well as in appropriate departments, divisions, sections, units, establishments and agencies.

21. Other officials:

a) hygienists and epidemiologists of the State Sanitary and Epidemiological Service, conducting the State sanitary and epidemiological surveillance, shall have the rights, identified in Subparagraphs 1 through 3, 11 through 13 of Paragraph 19 of this Regulation, as for the rights, mentioned in Subparagraphs 14 and 15, the above mentioned officials shall have them only with respect to the administrative violations, provided for by Article 42, Part Two of Article 41, Articles 78, 80 – 83, 95, 167, 168-1 and 170 of the Code of Administrative Violations of Ukraine (if those violations concern sanitary hygienic and sanitary contra-epidemic regulations and norms), and only in part of issuance of the protocol of violation of the sanitary legislation;

b) assistants to doctors of the State Sanitary and Epidemiological Service, conducting the State sanitary and epidemiological surveillance, shall have the rights, mentioned in Subparagraphs 1 through 3, 11 through 13 of Paragraph 19 of this Regulation, as for the rights, mentioned in Subparagraph 15, the above mentioned officials shall have them only with respect to issuance of the act and protocol of violation of the sanitary legislation.

22. For the purposes of conducting the State sanitary and epidemiological surveillance the Chief State Sanitary Doctor of Ukraine shall, in addition to the rights, listed in Paragraph 19 of this Regulation, have the following rights:

1) to approve regulations for use of dangerous factors, maximum permissible concentrations, approximately safe levels of chemical and biological agents in foodstuffs, materials, water, air, soil, as well as to set the norms of radiation safety and permissible levels of impact of other physical factors on a human being, lists of infectious diseases, in case of which a person is subject to hospitalisation, as well as of industries (professions), prohibited for persons, ill with infectious diseases, bearing agents of infectious diseases or not having been vaccinated against certain infectious diseases;

2) to establish jointly with the Ministry of Labour, lists of jobs which require medical examination;

3) to approve the State sanitary norms, subject to the State registration in accordance with the procedure, established by legislation;

4) to issue resolutions, obligatory for execution by all economic subjects, on prevention or elimination of adverse impact of any dangerous factor on public health;

5) to involve, in accordance with the established procedures, representatives of the Ministries, other central executive authorities, agencies and organisations for review of issues under his jurisdiction;

6) to establish commissions, expert and consulting boards as well as work groups, subject of approval of the appropriate central executive authorities;

7) to endorse the following:

- main directions of fundamental and applied research in the fields of hygiene and epidemiology;
- draft design norms, standards and technical specifications, allocation of productive resources and other projects capable of influencing public health;
- standards of educational and working load, regime of education of children and teenagers in educational establishments;
- methods for controlling and testing products with respect to their safety for public health and life;
- instructions (regulations) on using highly dangerous goods;
- list of agencies, organisations and establishments, authorised to test products for their compliance with safety requirements for public health and life;

8) to determine the list and content of the public health safety parameters for imported goods;

9) to determine the procedure for the State accounting of infectious and professional diseases and poisonings.

23. The State sanitary and epidemiological surveillance shall be conducted by authorities and institutions of the State Sanitary and Epidemiological Service in form of preventive and current surveillance of compliance of the central and local executive authorities, authorities of local self-government, enterprises, agencies, organisations and citizens with the sanitary legislation.

The main form of the State sanitary and epidemiological surveillance shall be the inspection of compliance with the sanitary legislation (hereinafter – the inspection). Inspections shall be conducted according to the plans of authorities and institutions of the State Sanitary and Epidemiological Service, as well as casually, depending upon sanitary and epidemiological situation, on the basis of reports submitted by enterprises, agencies and organisations, and citizens' notices.

Obligatory inspections shall be conducted in the course of the following:

- control of implementation of projects within the international, State and branch programs for ensuring the sanitary and epidemiological well-being of population, prevention of illnesses;

- review of drafts of local programs of social and economic development, drafts of design norms, standards and technical specifications, allocation of productive resources and other projects capable of influencing public health, standards of educational and working load, regime of education of children and teenagers in educational establishments;
- control over implementation of the sanitary and counter-epidemic activities, implementation of programs for prevention of illnesses, protection of public health;
- examination of objects and buildings, being put into operation;
- examination of proposals for appropriation of land for building up and other types of land use, water abstraction and wastewater discharge sites, allocation of industrial and other objects;
- issuance of permit for activities subject to licensing;
- investigation of causes and conditions of emergence of professional and infectious diseases, poisonings, radiation incidents (emergencies).

In other cases the State sanitary and epidemiological surveillance shall be executed by means of selective inspections of objects of the State sanitary and epidemiological surveillance depending on the sanitary, hygienic and epidemiological situation.

The results of inspections shall be issued in the form of protocol.

24. Decisions and actions of officials of the State Sanitary and Epidemiological Service, conducting the State sanitary and epidemiological surveillance, can be contested within ten days:

- a) decisions of the Chief State Sanitary Doctor of Ukraine can be contested by the Cabinet of Ministers of Ukraine, or by the court;
- b) decisions of the Chief Sanitary Doctors of the Ministry of Defence, the Ministry of Internal Affairs, the State Committee on Guardianship of the State Borders, the Main Department of the National Guard Commander, the Security Service of Ukraine can be contested by the Chief State Sanitary Doctor of Ukraine, or by the court;
- c) decisions of other chief state sanitary doctors and officials of the State Sanitary and Epidemiological Service can be contested by the top-level chief state sanitary doctor, or by the court.

Contesting of the previous decision shall not cancel the latter.

The chief state sanitary doctors shall within ten days review the complaints and take the appropriate measures, which shall be obligatory for execution.

In case of avoidance from complying with the above mentioned decisions the authority or official of the object of the State sanitary and epidemiological surveillance shall bear appropriate responsibility and the Chief State Sanitary Doctor (or his/her Deputy) shall take actions, provided for by the legislation.

25. Cases on violations of the sanitary legislation shall be administered in accordance with the requirements of the Code of Administrative Violations of Ukraine and according to the procedure, established by the Chief State Sanitary Doctor of Ukraine.

26. The State Sanitary and Epidemiological Service shall conduct its activities, related to the State sanitary and epidemiological surveillance, in cooperation with other specially authorised bodies, performing the State surveillance and control, as well as with enterprises, agencies and organisations, public organisations, whose activities are aimed at prevention of diseases, protection of public health and environment, protection of citizens' rights to safe conditions of life.

27. Forms of documents (inspection protocol, sanitary legislation violation protocol, order, resolution, proposal, and petition), issued by officials of the State Sanitary and the Chief Sanitary Doctor of Ukraine shall approve Epidemiological Service, performing the State sanitary and epidemiological surveillance.

28. Employees of the State Sanitary and Epidemiological Service shall be subject to the legal and social protection, material and social provision, as provided for by the legislation. The details of such protection and conditions of provision of soldiers, officers and hired employees of the sanitary and epidemiological service of the Ministry of Defence, the Ministry of Internal Affairs, the State Committee on Guardianship of the State Borders, the Main Department of the National Guard Commander, the Security Service of Ukraine shall be regulated by appropriate laws.

29. Officials of the State Sanitary and Epidemiological Service, conducting the State sanitary and epidemiological surveillance, shall have certificates of employment, their form shall be established and approved by the Chief State Sanitary Doctor of Ukraine.

Vehicles which are used by the authorities and institutions of the State Sanitary and Epidemiological Service shall be of appropriate colour and have appropriate inscription with symbol (the vessels shall have the pennant).

30. Officials of the State Sanitary and Epidemiological Service, using public transport when carrying out their duties, shall be compensated for their travel costs by corresponding authorities and departments using funds, provided for maintenance of those authorities and departments, according to approved budgets and in accordance with the procedure, established by the Cabinet of Ministers of Ukraine. When on missions, those officials have priority in purchase of tickets and accommodation in hotels.

31. Officials of the State Sanitary and Epidemiological Service, conducting the State sanitary and epidemiological surveillance, shall bear responsibility for violation of the Law of

Ukraine "On Ensuring Sanitary and Epidemiological Welfare of Population" (4004-12) and inappropriate performance of their duties in accordance with the legislation.

32. Authorities and institutions of the State Sanitary and Epidemiological Service, conducting the State sanitary and epidemiological surveillance, shall be maintained in accordance with the legislation.

33. Authorities and institutions of the State Sanitary and Epidemiological Service shall be legal entities, have independent balance – sheets, accounts in financial institutions, seals with the State Emblem of Ukraine and the name of the institution, stamps and letterheads. The chief State sanitary doctors shall have letterheads and seals with appropriate inscription.

The Chief State Sanitary Doctor of Ukraine and his/her Deputies shall have letterheads and round seals with the State Emblem of Ukraine and the appropriate inscription.