С.Ж.АСФЕНДИЯРОВ АТЫНДАҒЫ ҚАЗАҚ ҰЛТТЫҚ МЕДИЦИНА УНИВЕРСИТЕТІ

КАЗАХСКИЙ НАЦИОНАЛЬНЫЙ МЕДИЦИНСКИЙ УНИВЕРСИТЕТ ИМЕНИ С.Д.АСФЕНДИЯРОВА

Кафедра:жалпы гигиена және экология

СӨЖ

ТАҚЫРЫБЫ:RISK FOR A HEALTH AND ECOLOGICAL RISK

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Introduction

- A human health risk assessment is the process to estimate the nature and probability of adverse health effects in humans who may be exposed to chemicals in contaminated environmental media, now or in the future.

What is Health Risk Assessment?

- Health risk assessment involves a comprehensive analysis of the dispersion of emitted chemicals in the air and the extent of human exposure via relevant pathways (**exposure assessment**), the toxicology of those chemicals (**dose-response assessment**), and the estimation of cancer risk and non-cancer health impacts to the exposed community (**risk characterization**)

- A **health risk assessment** (also referred to as a health risk appraisal and health & well-being assessment) is one of the most widely used screening tools in the field of health promotion and is often the first step in multi-component health promotion programs.
- A health risk assessment (HRA) is a health questionnaire, used to provide individuals with an evaluation of their health risks and quality of life.Commonly a HRA incorporates three key elements – an extended questionnaire, a risk calculation or score, and some form of feedback i.e. face-to-face with a health advisor or an automatic online report.

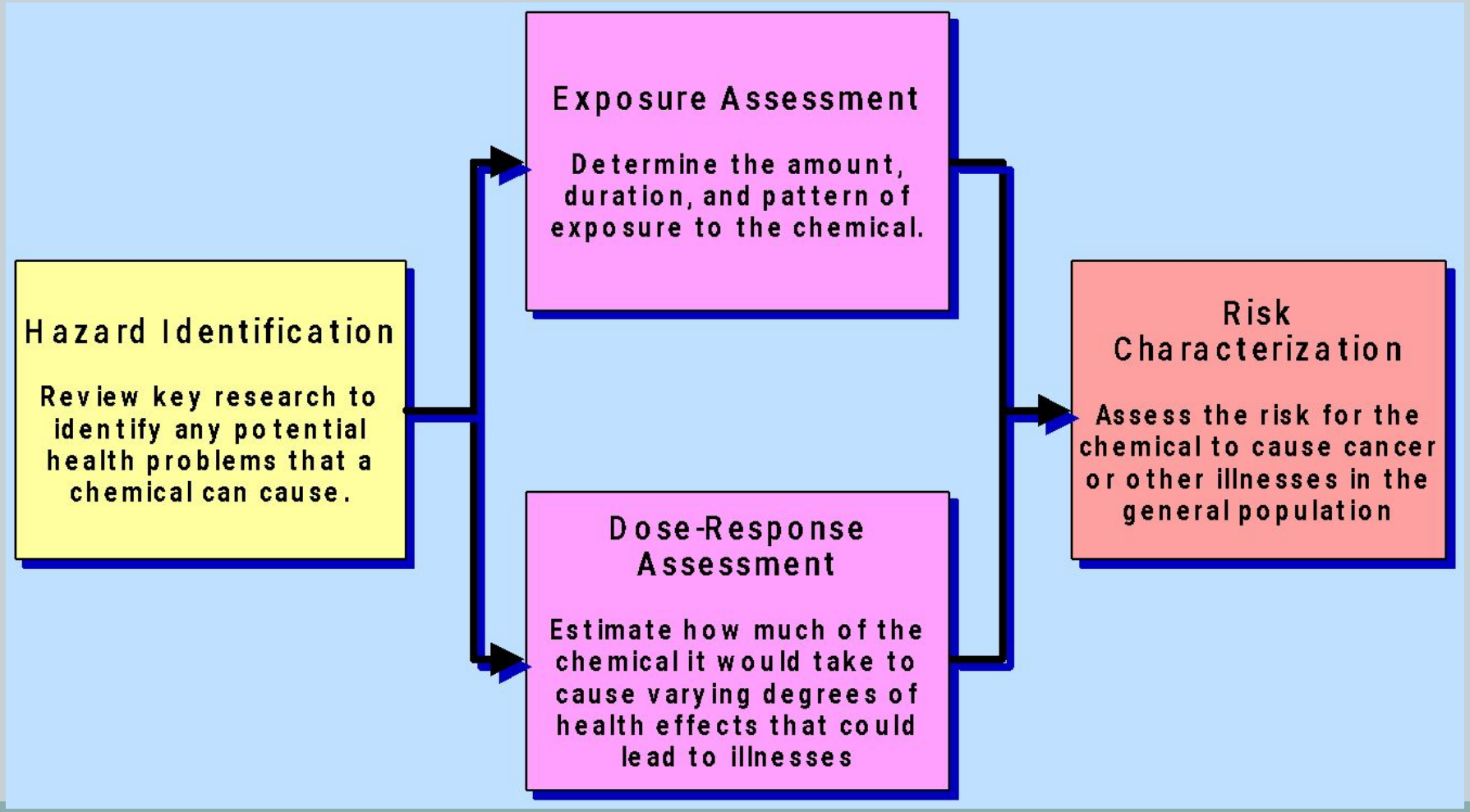
History

- The original concept of the HRA can be traced back to the decision by the assistant Surgeon General of the United States to conduct a study to determine probable 10-year lifespan of individuals based on lifestyles and predisposed conditions. The project, led by Lewis C.

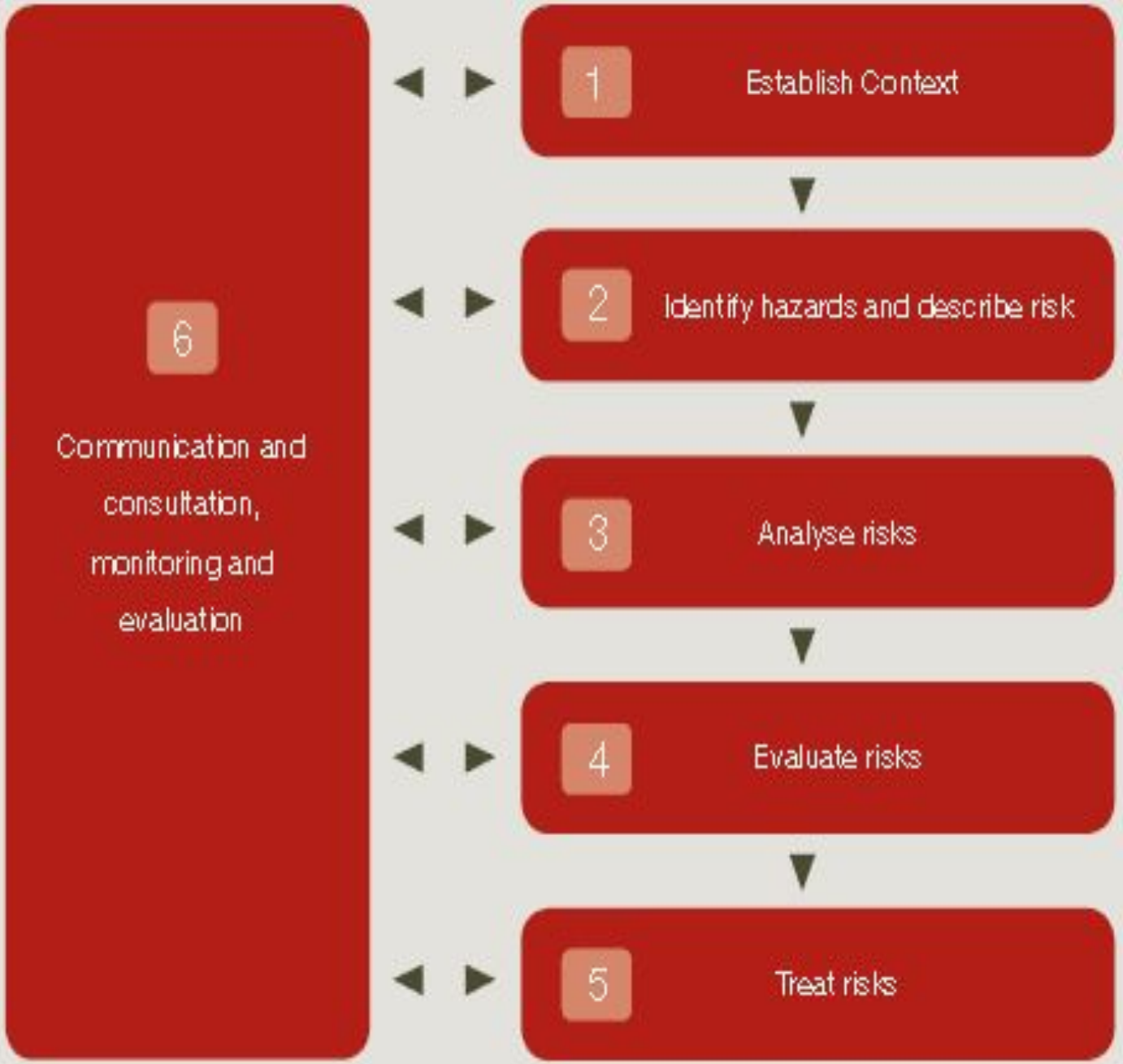
  In 1970, a manual for physicians, How to Practice Prospective Medicine, provided a sample HRA questionnaire, risk computations, and a feedback strategy.Although the medical profession did not generally adopt HRAs, instruments proliferated elsewhere, most notably through workplaces and community-based health promotion programs.

  The use of HRAs and corporate wellness programs has been most prevalent in the United States, with comparatively slower growth elsewhere.However there has been recent strong growth in corporate wellness outside the US, particularly in Europe and Asiaotably through workplaces and community-based health promotion programs.

Risk Assessment



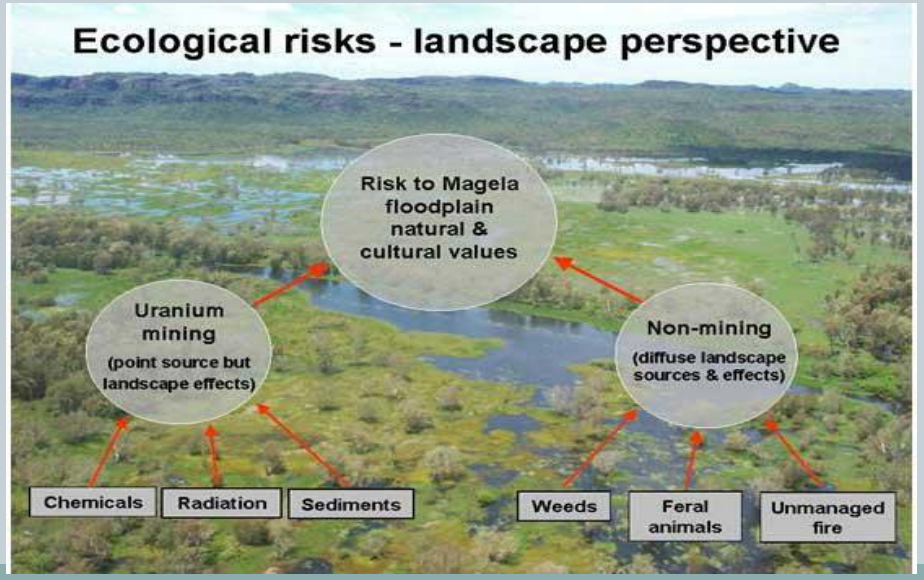
The Risk Assessment Process



What is ecological risk?

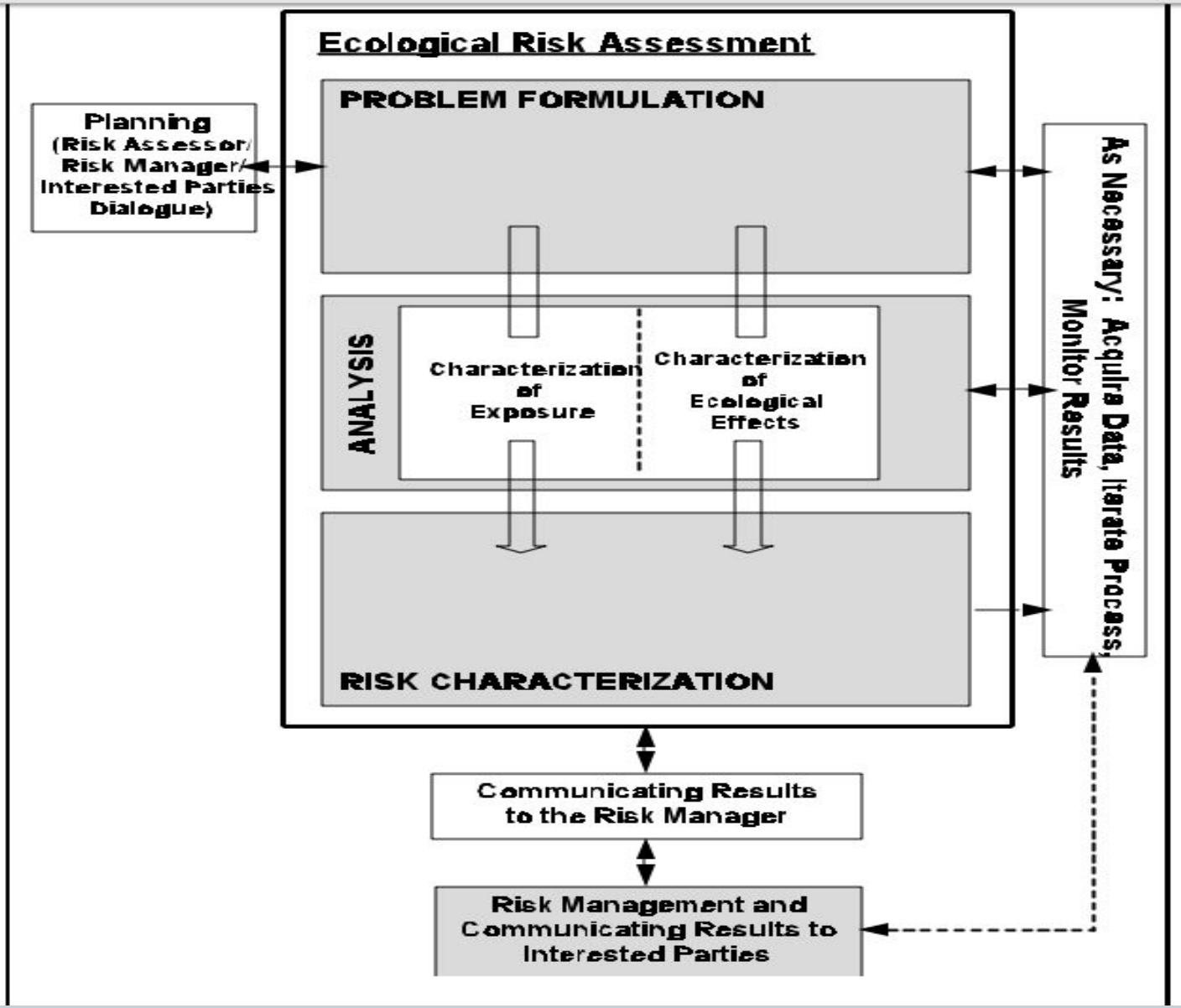
- Ecological risk assessment is a process that evaluates the likelihood that adverse ecological effects may occur or are occurring as a result of exposure to one or more stressors (U.S. EPA, 1992a). The process is used to systematically evaluate and organize data, information, assumptions, and uncertainties in order to help understand and predict the relationships between stressors and ecological effects in a way that is useful for environmental decision making.

- The ecological risk assessment process is based on two major elements: characterization of effects and characterization of exposure. These provide the focus for conducting the three phases of risk assessment: problem formulation, analysis, and risk characterization.



- Ecological risk assessments are developed within a risk management context to evaluate human-induced changes that are considered undesirable. As a result, these Guidelines focus on stressors and adverse effects generated or influenced by anthropogenic activity. Defining adversity is important because a stressor may cause adverse effects on one ecosystem component but be neutral or even beneficial to other components. Changes often considered undesirable are those that alter important structural or functional characteristics or components of ecosystems. An evaluation of adversity may include a consideration of the type, intensity, and scale of the effect as well as the potential for recovery. The acceptability of adverse effects is determined by risk managers. Although intended to evaluate adverse effects, the ecological risk assessment process can be adapted to predict beneficial changes or risk from natural events.

s/2014-11/documents/eco_risk_assessment1998.pdf



DEDUCTION:

- Currently, the concept of risk assessment in almost all countries and international organizations is seen as the main mechanism for the development and management decision-making at the international, national or regional level and at the level of individual production or other potential source of pollution.
- Ecological risk assessments can be used to predict the likelihood of future adverse effects (prospective) or evaluate the likelihood that effects are caused by past exposure to stressors (retrospective). In many cases, both approaches are included in a single risk assessment. For example, a retrospective risk assessment designed to evaluate the cause for amphibian population declines may also be used to predict the effects of future management actions. Combined retrospective and prospective risk assessments are typical in situations where ecosystems have a history of previous impacts and the potential for future effects from multiple chemical, physical, or biological stressors.

Key words:

- **Adverse ecological effects**—Changes that are considered undesirable because they alter valued structural or functional characteristics of ecosystems or their components. An evaluation of adversity may consider the type, intensity, and scale of the effect as well as the potential for recovery.
- **Agent**—Any physical, chemical, or biological entity that can induce an adverse response (synonymous with stressor).
- **Assessment endpoint**—An explicit expression of the environmental value that is to be protected, operationally defined by an ecological entity and its attributes. For example, salmon are valued ecological entities; reproduction and age class structure are some of their important attributes. Together "salmon reproduction and age class structure" form an assessment endpoint.
- **Ecological risk assessment—The** process that evaluates the likelihood that adverse ecological effects may occur or are occurring as a result of exposure to one or more stressors. Ecosystem—The biotic community and abiotic environment within a speci.
- **Population**—An aggregate of individuals of a species within a specified location in space and time. Primary effect—An effect where the stressor acts on the ecological component of interest itself, not through effects on other components of the ecosystem (synonymous with direct effect; compare with definition for secondary effect)fied location in space and time

Literature:

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