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An assessment of the occupational and environmental health needs in seven Southeastern European and West-Central Asian countries

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Abstract Eastern European and Central Asian countries are undergoing rapid socioeconomic and political reforms. Many old industrial facilities are either abandoned, or use outdated technologies that severely impact the environment. Emerging industries have less regulation than in developed countries and environmental and occupational problems seem to be increasing. Under a US National Institutes of Health pilot grant, we developed an interdisciplinary One Health research network in Southeastern Europe and West-Central Asia to identify environmental and occupational problems. From 2012 to 2014, this GeoHealth Hub engaged 11 academic centers and 16 public health institutions in eight different countries: Albania, Armenia, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Romania, and the United States with a goal of strengthening environmental and occupational research and training capacities. Employing face-to-face interviews and large group meetings, we conducted an evidenced-based needs and opportunities assessment focused on aquatic health, food safety, and zoonotic diseases. Comprehensive reviews of the

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published literature yielded priority research areas for each of the seven GeoHealth Hub countries including heavy metal and pesticide contamination, tick-borne diseases, rabies, brucellosis, and inadequate public health surveillance.

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1. Introduction

Eastern European and Central Asian countries are undergoing rapid socioeconomic and political changes which are impacting their health system organizational structure [1,2]. Emerging industries within these countries, such as chemical production, car manufacturing, and agricultural activities have less safety regulations compared to analogous industries in developed countries, and by some metrics, environmental and occupational problems are increasing [3]. Considerable evidence exists that correlates health status with socioeconomic status in these countries and that lower income countries experience further health impacts [4,5]. Other public health issues impacting these countries involve outbreaks of enteric pathogens due to contaminated products, antimicrobial resistant organisms linked to animal production, and zoonotic disease outbreaks [6].

Thus, many of today's environmental and occupational public health problems are exceedingly complex and influenced by global economics. Understanding and mitigating these problems requires a partnership of diverse professional disciplines and industry partners.

1.1. GeoHealth Hub formation

In an effort to assess these complex, emerging problems impacting Southeastern European and West Central Asian countries, collaborators from the University of Florida, USA and Babeş-Bolyai University (BBU), Romania, established the GeoHealth Hub for Eastern Europe and West Central Asia. The GeoHealth Hub was established with the help of a grant from the US National Institutes of Health's Fogarty International Center. The Fogarty International Center aims to address global occupational and environmental health issues abroad by awarding research grants to paired US and low- or middle-income country-based institutions to develop regional research hubs. The overarching goals stemming from the development of regional hubs include developing ''collaborative research, data management, training, curriculum and outreach material development, and policy support around high priority local, national, and regional environmental and occupational health threats'' [7]. As such, in November 2012, the GeoHealth Hub initiated meetings to develop and solidify plans with preexisting collaborators from the following seven low- and middle-income countries (LMICs): Albania, Armenia, Georgia, Kazakhstan, Kyrgyzstan, Moldova, and Romania. These countries would serve as the target countries for the GeoHealth Hub and were chosen from previous collaborating partner institutions.

Upon formation, the GeoHealth Hub decided to embrace a One Health approach in their research methodologies. This approach relies on the collaboration and expertise of multi-disciplinary professionals to solve complex health problems stemming from interactions between human, animal, and environmental factors [8]. Collaborators consisted of varied professionals from public health, veterinary health, and environmental health backgrounds working in 27 institutions from eight countries (Table 1).

1.1.1. GeoHealth Hub objectives

The short-term goals of these collaborations were to assess three key areas affecting GeoHealth Hub countries that fall under the umbrella of environmental and occupational health. These key areas included: (1) aquatic health, (2) food safety, and (3) zoonotic diseases. Long-term objectives for the GeoHealth Hub include strengthening institutional capacity for environmental and occupational health research and training, employing a One Health approach to identify research needs, and then successfully designing research interventions for the target countries.

At a series of November 2012 small group meetings with a goal to identify the issues related to aquatic health, food safety, and zoonotic diseases in the target countries, collaborators agreed to conduct a literature review and a prioritized, health needs assessment (HNA) for each country. Participants (Table 2) convened in Cluj-Napoca, Romania in June 2013 to share and discuss findings from each country. This report details the findings from the literature review and HNA performed for the seven target countries.

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