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Life science research: opportunities and risks for public health

Mapping the issues

World Health Organization

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Communicable Disease Surveillance and Response
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1. Introduction

Outstanding advances have been made in the past few decades in the life sciences and in biotechnology, including genetic engineering, genomics, proteomics and bioinformatics. Knowledge obtained in the field of life sciences and the techniques developed hold the potential for improving human health, welfare and economic development in Member States of the World Health Organization (WHO). Although biotechnology has created many opportunities and applications for public health, medicine, agriculture and the food industry, this progress has important ethical, legal and social implications. The discipline of bioethics and concerns about a 'genomic divide' (*1*) in global health between the developing and developed world illustrate some of these implications.[1]

This working paper addresses another public health implication of advances in life science research and development (R&D): its potential deliberate misuse to cause harm. Research, techniques and knowledge in the life sciences can be used for both legitimate and illegitimate purposes. Therefore, this raises the problem of how best to manage the risks associated with such research, techniques and knowledge without hindering its beneficial application to public health and welfare.

Managing the risks of science and technology is not a new issue, as nuclear research and technologies are already being managed and monitored. The challenges are, however, different, as the scale and access to nuclear technologies differ greatly from those of biological research and technologies. Fissionable materials are, for instance, easier to control than pathogens and toxins, and biological techniques are less expensive and sophisticated than their nuclear counterparts. Moreover, the wide, rapid diffusion and availability of life science R&D and expertise mean that its control must not affect its legitimate civilian and public health applications.

This working paper addresses an issue that is important to public health for at least four reasons.

Life science R&D for strengthening public health responses to natural, accidental or deliberate epidemics can have both benefits and risks for national and international public health