

Survey samples life scientists' views on 'dual use' research and bioterrorism

February 5 2009

Rapid advances in the biological sciences over the last several decades have yielded great benefits such as medical therapies and vaccines. But some of these same scientific advances could also be used for malicious purposes, a threat that has become more salient to the science and policy communities since the terrorist attacks of 2001.

The National Research Council and the American Association for the Advancement of Science (AAAS) surveyed a sample of AAAS members in the life sciences to assess their awareness of and attitudes toward such "dual-use" research - studies undertaken for beneficial purposes that could also have harmful applications such as bioterrorism. The survey also explored actions the scientists might support to reduce the risk of misuse of research, as well as steps that scientists may already be taking in response to these concerns. The results of the survey, conducted in 2007, are summarized in a new report from the Research Council, which includes recommendations for next steps.

The survey yielded some of the first empirical data on U.S. life scientists' views about biosecurity and the potential misuse of legitimate scientific research. The survey results offer insights and generate hypotheses that can be tested in future efforts, said the committee that wrote the report. However, a low response rate and uncertainties about whether the sample reflects the broader life sciences community limit the ability to generalize from the responses about the full U.S. life sciences community. Nevertheless, even with this limitation, the survey results are useful and informative, noted the committee.

The results suggest that survey respondents perceive a potential but not overwhelming risk of a bioterror attack in the next five years, a risk they believe is greater outside the U.S. Most respondents do not believe it is likely that dual-use knowledge, tools, or techniques will facilitate a bioterror attack in that time period.

Survey results also indicate that some respondents -- more than the committee had expected -- have been so concerned about dual-use issues that they have already taken action to try to avert misuse of research in the life sciences, even in the absence of guidelines or government restrictions. Some respondents reported that they had broken collaborations, not conducted some research projects, or not communicated research results.

Many of respondents' precautionary actions were taken during design, collaboration, and initial communication stages of research, before reaching the publication stage, the report notes. Of particular interest and concern to the committee, a few respondents offered comments about foreigners as potential security risks, which may be reflected in the reported avoidance of some collaborations.

"The fact that some scientists are changing their research activities may indicate that the life sciences community is responsibly responding to reduce the risk of misuse of science," said committee chair Ronald Atlas, professor of biology and public health at the University of Louisville. "But it is also possible that some scientists are overreacting to the perceived threat, for example by breaking collaborations and excluding foreigners from their laboratories. Our committee feels that it's important to further investigate how research activity is being changed in response to dual-use concerns."

With regard to future actions that the life sciences community would support to reduce the threat of misuse of research, the survey results

indicate that life scientists in the U.S. may be more willing to consider mechanisms to reduce risks if they are developed and implemented by the scientific community itself. Most respondents favor their professional societies prescribing a code of conduct to help prevent misuse of life science research, for example, while a minority supported greater federal oversight. Among possible government restrictions, respondents were more supportive of restrictions on access to biological agents and certification of researchers than of any control of scientific knowledge generated from the research.

In addition, respondents showed support for mandatory training by institutions for practicing life scientists regarding dual-use concerns, as well as education materials and lectures for students.

The survey results also highlight the need to better define the scope of research that is of concern, the report notes. Fewer than half the respondents who reported carrying out dual-use research activities felt that their work falls into one of the seven categories of research of concern identified by the National Science Advisory Board for Biosecurity, which was created in 2004 to advise federal agencies about dual-use research.

Based on the survey results, the committee urged further exploration of ways to provide guidance to the life sciences community about appropriate actions that could protect against misuse of dual-use research. The committee also recommended further research to examine the effectiveness of educational programs on these topics and find ways to enhance them.

In addition, the report recommends surveys and interviews that can reach additional life scientists or begin to probe more deeply into life scientists' attitudes. And surveys of scientists outside the U.S. would increase knowledge and help facilitate international discussions of

potential measures to address concerns about dual-use research.

Source: National Academy of Sciences

Citation: Survey samples life scientists' views on 'dual use' research and bioterrorism (2009, February 5) retrieved 19 April 2024 from <https://phys.org/news/2009-02-survey-samples-life-scientists-views.html>

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