

Given that anything less than 3 microns in diameter is respirable across what amounts to a 75 square meter absorptive surface, the miniaturization of respiratory delivery systems comes with considerable dual-use risk. Moreover, transgenic plants could be put to dual-use as bioregulator-production factories.

In many ways, bioregulators pose serious dual-use risks:

- Their onset of action is rapid, occurring within minutes to hours.
  - They can potentially cause injury or death with no obvious evidence of attack (i.e., stealth factor).
  - Their clinical effects are non-specific (i.e., very low index of clinical suspicion).
  - Casualties may manifest as multiple occurrences of unexplained symptoms.
    - They target critical human biochemical pathways.
    - They may target multiple organ systems (e.g., central nervous system, lungs, immune system, gastrointestinal system, cardiovascular system, etc.).
    - Potential long-term consequences include pulmonary fibrosis, cancer, sterility, autoimmunity, etc.
    - There are no vaccines available.
    - Most bioregulators are not on standard military threat lists, meaning there is no provision for appropriate antidote stockpiling.
    - The effects of bioregulators may synergize with those of traditional BT/BW agents.
    - They can be engineered to target specific human biological systems at the molecular level.
    - Future potential as threat agents will parallel advances in biotechnology.

Bioregulators have been used in prior state-sponsored bioweapons programs, including South Africa's Project Coast, which included a peptide synthesis program aimed at enhancing the effects of certain bioregulators (see Chapter 3). Also, according to congressional testimony by Soviet defectors, the former Soviet Union reportedly synthesized recombinant bioweapon peptides that could induce autoimmunity.<sup>7</sup>

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<sup>7</sup>Alibek, K. 1999. Congressional Testimony before the House Armed Services Committee; October 20.