

Safety breaches at UK labs handling lethal viruses

Some of the organisms in the laboratories where safety breaches occurred have no vaccines or treatments



SEM of Anthrax bacteria spores Photo: Alamy

By Keith Perry

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High-security laboratories that handle lethal viruses and bacteria have reported more than 100 accidents or near-misses to safety regulators in the past five years, official reports have disclosed.

One error led to live anthrax being sent from a government facility to unsuspecting labs across the UK, a mistake that exposed other scientists to the disease. Another caused the failure of an air handling system that helped contain foot and mouth disease at a large animal lab.

Wear and tear also caused problems and potentially put researchers in danger. At a top security Ministry of Defence lab, tears were found in isolation suits at a facility handling animals infected with the Ebola virus.

Reports obtained by the Guardian from the Health and Safety Executive (HSE) reveal that more than 70 incidents at government, university and hospital labs were serious enough to investigate. Many led to enforcement letters, or crown prohibition notices (CPN), ordering labs to shut until improvements were made. Some were so serious they ended in legal action.

Prof Richard Ebright, a US biosafety expert at Rutgers University in New Jersey, who reviewed the reports for the Guardian, said that, taken together, they revealed failures in procedures, infrastructure, training and safety culture at some British labs.

Commenting on a series of incidents at facilities that work on animal diseases, Ebright asked: “Does British agriculture have a death wish?”

The figures amount to one probe every three weeks at secure laboratories that are designed to carry out research on pathogens that can cause serious illness and spread into the community. Some of the organisms are lethal and have no vaccines or treatments.

Many of the incidents were one-off, almost inevitable human mistakes, such as spillages of infectious bugs. Others were down to old equipment and safety clothing. The most serious accidents arose from chains of mistakes that happened one after the other, and were often only discovered later.

The reports compiled by the HSE describe at least 116 incidents and 75 completed investigations since April 2010 at laboratories where the most dangerous organisms are handled. Other investigations are under way, but the HSE cannot disclose details of those in case they lead to legal action. All of the investigations were prompted by reports from lab managers who are obliged by law to tell the HSE when an accident or near-miss happens at their facility.

Some of the most disturbing incidents occurred at the Surrey-based Animal Health and Veterinary Laboratories Agency (AHVLA), renamed the Animal and Plant Health Agency (APHA) in October. In one case, scientists were handling anthrax when something went badly wrong. They meant to send harmless samples, killed by heat, to nearby AHVLA labs and others in York and Belfast. But somehow the tubes got mixed up. Instead of sending out dead material, the anthrax they sent was live and dangerous.

The staff who made the mistake were safe enough. They worked in a high-security lab built to contain lethal agents. But some of those who received the bugs did not. In Belfast, the anthrax was handled in a higher containment lab, meaning those staff were safe. In York, the samples

were never opened. But at another AHVLA site, scientists opened the tubes in a less secure lab and got to work on the open bench. The incident at the AHVLA is one of the more serious biological accidents that has happened in the UK in recent years. But it was far from being the only one.

The anthrax incident at the AHVLA happened in May 2012 and drew an immediate crown prohibition notice, which closed the lab so no more live anthrax could be sent out. Ironically, the government had spent months stockpiling anthrax vaccines in case terrorists released the bug at the London Olympics.

The HSE investigation found that two staff at the AHVLA were unwittingly exposed to the deadly virus, though both had been vaccinated and neither fell ill. The incident received little attention. In the agency's 2012-13 annual report, one line refers to the clampdown. It states: "CPN – labelling and tracking of biological materials inadequate – now resolved".

The AHVLA has made dangerous slips before. Last year, the lab received a crown censure for nine safety lapses that exposed staff to live *Mycobacterium bovis*, an organism that causes TB in cattle but can cause serious illness and even death in humans.

Over a two-year period, from 2009 to 2011, 3,700 samples were sent from one AHVLA lab to another without managers knowing the organisms were still viable. Minutes of the crown censure hearing reveal an alarming picture. Staff had been given the wrong equipment to destroy the bacteria and were not trained in the right procedure. Management had failed to act when staff raised concerns. One person later tested positive for the infection.

Britain has about 600 CL3 labs. Nine sites, all in south-east England, are home to CL4 labs, including the National Institute for Medical Research, which studies pandemic and avian flu, and the Ministry of Defence's Porton Down lab, which studies Ebola and other pathogens that could be used as biological weapons.

The Institute for Animal Health (IAH), renamed the Pirbright Institute in 2012, was handed eight enforcement letters since April 2010, more than any other single facility.

A BIS spokesperson said: "We take any breach of security and safety procedures in animal disease testing facilities very seriously. In these instances, there was no risk to the public and no viruses were released. Health and safety procedures at Pirbright have been strengthened and the BBSRC [Biotechnology and Biological Sciences Research Council] have invested millions of

pounds into facilities including the National Virology Centre, which boasts a brand new state-of-the-art high laboratory facility. An independent review was commissioned to promote the development of robust, effective systems and work practices at Pirbright and ensure public safety”.

A spokesperson for the Department for Environment, Food and Rural Affairs, which funded the AHVLA and now the APHA, said on Thursday afternoon:“UK animal disease laboratories are nationally and internationally recognised for their expertise, playing a crucial role in the swift diagnosis of notifiable disease, as shown in the recent avian flu outbreak. As with any laboratory, improvements in procedures are continually made and we always follow HSE advice.”

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