Responses to Security Sensitive Biological Agents (SSBA) risks by the Australian Federal Police

Abstract. As Australia’s national law enforcement agency the Australia Federal Police (AFP) plays a number of roles, broadly grouped under intelligence and investigation, in supporting a whole of government approach to responding to, and mitigating, risks from Security Sensitive Biological Agents (SSBA). The AFP is responsible for coordinating the investigation of national and transnational crimes, which includes acts of bioterrorism, and preventing, countering and responding to attacks in Australia and on Australian interests overseas. This paper provides an overview of the responses to SSBA risks by the AFP.

Introduction

Several types of biological agents, including bacteria, fungi, viruses and naturally derived toxins, pose a serious threat to Australia and internationally, and have the potential to impact human, plant and animal health, as well as national security, agriculture, economy, trade, infrastructure and international relations. Biological agents can be attractive to those with nefarious intent due to the ease with which some can be acquired, grown and/or dispersed, along with their ability to cause widespread harm, panic or fear, avoid detection and/or survive in the environment. The use of biological agents to cause harm has been well documented throughout history and use may be in the form of biological warfare (military motivated, state sponsored), bioterrorism (smaller groups and organisations, often motivated by political, nationalistic, religious or other agendas) and biocrime (traditional criminal activities including murder, robbery and extortion). Biological agents have been used in suicides and released accidentally (e.g. from labs). Natural disease outbreaks also have the potential to impact greatly on Australia, calling to action the services of law enforcement, as seen all too clearly in the recent COVID-19 pandemic. A notable international example was the 2001 anthrax letter attacks in the United States that caused five deaths and led to more than 3000 white powder incidents occurring in Australia in the following three weeks alone1.

The Australian Government has established a number of policies and procedures pertaining to the use of biological agents including the Security Sensitive Biological Agents (SSBA) Regulatory Scheme, administered under The Health Security Act 2007. The SSBA Regulatory Scheme provides the legislative framework under which the security of SSBA can be managed at a national level. It aims to limit opportunities for acts of bioterrorism or biocrime through the regulation of SSBA possession, storage, use and transport. The SSBA Regulatory Scheme balances the risk of criminal use of SSBA against the interests of the regulated community, while providing full access to those with legitimate need. There are currently 20 SSBA on the list2.

Australia Federal Police response to the SSBA risks

Intelligence

Within the intelligence domain, to mitigate the risks of SSBA, the Australia Federal Police (AFP) brings together members with expertise in intelligence, microbiology and forensic practice to provide intelligence and technical advice to support Government, state
and territory jurisdictions, and national and international bodies in matters relating to the prevention, preparedness and response to actions involving SSBA. Specifically, the AFP collects and assesses data from several sources about SSBA, their precursors, availability and methodologies required to prepare and disseminate them, as well as the impact of their misuse in Australia and interest in use from terrorist and criminal entities. This includes trend analysis on current threats to national security and new and emerging threats.

The AFP has been a stakeholder with the SSBA scheme since its establishment and makes a number of important contributions. Two key roles are: (1) the provision of assessments on biological agents including availability, isolation/production and dissemination of the agent by terrorist and criminal entities; and (2) assessment of entities requesting to work with SSBA. The AFP has also assisted in the preparation of guidelines for the SSBA Regulatory Scheme including ‘Indicators of Suspicious Behaviour in Laboratories’ and is listed as a point of contact if an individual/entity is unsure of whether something is a reportable event.

The AFP is a key member of the Australian Intelligence Community and has representation on several national organisations and committees with a key role being to provide sharing of information from an intelligence and law enforcement perspective. These include the Public Health Laboratory Network (PHLN), Australian (counter) Bioterrorism Laboratory Network (ABLN), Australia-New Zealand Counter-Terrorism Committee (ANZ CTC), the Royal College of Pathologists of Australasia Quality Assurance Program (RCPA QAP) and the Australian Capital Territory Chemical Biological Radiological and Nuclear (ACT CBRN) committee and working groups. Internationally the AFP contributes to activities at INTERPOL and the United Nations, including members being recognised as experts on the United Nations Secretary-General’s Mechanism roster.

**Enforcer of legislation**

The AFP is an enforcer of a number of pieces of ACT legislation (via ACT Policing) and Commonwealth legislation whose purpose is to mitigate against the threat posed by biological agents and support the police and intelligence agencies to investigate and prevent Chemical Biological Nuclear Radiological and Explosive (CBRN&E) and terrorism related events. Each state and territory also has equivalent legislation allowing jurisdictional law enforcement to investigate and enforce and CBRN&E and terrorism related events. National legislation includes:

- **National Health Security Act 2007**: provides the legislative framework for the regulatory scheme for entities and facilities that handle suspected or known SSBA.
- **Biosafety Act 2015**: provides the legislation to prevent, eliminate, minimise and manage biosecurity risks. In the current context, the AFP is responsible for legally enforceable directions and requirements that, for the COVID-19 pandemic, included social distancing fines, quarantine breaches and arrests of those spitting.
- **Customs Act 1901**: provides legislative basis for control of defence and dual use goods and technologies. Controls are enacted via the 1958 (Prohibited Exports) regulations and the Defence and Strategic Goods List.
- **Defence Trade Control Act 2012**: strengthens Australia’s export controls to prevent technology, goods, software or services that can be used in conventional and weapons of mass destruction from falling in the wrong hands.
- **Criminal Code Act 1995**: contains Australia’s terrorist act offences.

These Acts also provide the legislative framework needed for Australia to enforce UN Security Council Resolution 1540, and support the Nuclear Non-Proliferation Treaty, the Chemical Weapons Convention and the Biological Weapons Convention.

**Investigations**

The AFP may be called on to investigate a false alarm, hoax or real threat. A false alarm is an incident where an inert substance or ‘white powder’ is found out of place but with no accompanying threat such as a letter, email or phone call. A hoax is defined as an incident where a benign or inert ‘white powder’ is discovered and there is a supporting threat such as a letter or phone call. A real threat is one where white powder contains an active substance (such as an SSBA).

The AFP has a mobile laboratory (called the mobilab) that can be deployed to events involving SSBA threats such as ‘white powder’ threats. In this mode, the mobilab can be placed adjacent to the exclusion zone (or hot zone) to provide onsite processing of samples and exhibits directly from the scene (Figure 1). When needed, the mobilab can also be pre-deployed to support significant national and international meetings. The mobilab is a large caravan, consisting of two compartments, which are atmospherically separated from each other and the outside environment. The air management system uses high-efficiency particulate air (HEPA) filtration and variable speed fans on the intake and exhaust in each compartment, to generate atmospheric gradients up to Physical Containment 3 level for atmospheric containment. The primary examination of exhibits is conducted in a Class 3 Biological Safety Cabinet (BSC) that has been modified to allow the examination of
chemical hazards as well as biological hazards. Liquid sub-samples that are to be screened for SSBA are handled in a Class 2 Type B2 BSC.

The mobilab provides a screening level capability for chemical, biological and radiological (CBR) agents. Radiation detection instruments are used to screen exhibits for radiological contaminants. A variety of chemical tests and detectors are used to screen exhibits for chemical hazards. Staining and microscopy, and immunoassays provide rapid screening of samples for biological agents. A gas chromatograph mass spectrometer (GC-MS) with a dual flame photometric detector for phosphorous and sulfur is the primary instrument used for the presumptive identification of chemical agents. All testing performed in the mobilab is accredited under ISO17025:2017 and AS5388 (Parts 1–4). The laboratory space in the mobilab is only suitable for the examination of small items and is limited in the number of forensic techniques that can be undertaken. In the event of a large CBR incident, the AFP has formal and informal agreements with other government agencies that can provide appropriate laboratory space, personnel protection and containment that will allow AFP scientists to perform an array of forensic examinations on CBR contaminated exhibits.

The primary purpose of the mobilab is to provide protection to AFP personnel and AFP assets and provide support to AFP investigations. Used at the scene, the mobilab provides information on the hazards that are present so first responders and AFP personnel can manage the risks appropriately. It also provides information that can help crime scene examiners target the collection of relevant samples and exhibits thereby limiting their exposure to the scene. The analyses performed at the scene provide AFP investigators information which they can use to guide the early stages of their investigation, including the collection of appropriate medical samples and personal items from victims. Located back at base, the mobilab is used to screen exhibits that have been collected from hazardous scenes and have been submitted for traditional forensic examination. The screening performed in the mobilab minimises the risk of hazards being introduced into the main forensic laboratory.

The expertise within the AFP is primarily focussed towards traditional forensic techniques. The expertise required to conduct confirmatory level identification and characterisation of the agents resides within our partner agencies, namely the public and animal health laboratories and defence laboratories. Through collaborative partnerships with these laboratories and through memberships on key national committees such as PHLN and ABLN, the AFP ensures the forensic microbiological examinations can be provided within an accredited quality management framework. The information gathered from the scene and the subsequent investigation conducted by our partners will be crucial to informing the police investigation.

**Final comments**

The AFP is one of many agencies supporting a coordinated whole of government response to, and mitigating, the risks associated with SSBA. The AFP plays several roles pertaining to intelligence, enforcing legislation and investigations in coordination with our partner agencies at local, jurisdictional, national and international levels.
To mask or not to mask: is it really a question?

Masks have been used for eons but mainly for theatre and other entertainment. The first masks to have any medical significance were worn to block exposure to the repulsively putrid odour from rotting organic matter, usually dead humans and their wastes. In the days when the Miasma theory purported to explain infectious disease, bad or odiferous air spelled danger. The use of nose gags or small posies of aromatic herbs and flowers was also thought to be protective. Grave diggers commonly bound their faces with cloths to enable them to bury bodies without risk of contracting disease.

Joseph Lister’s discovery of the antibacterial activity of phenolic compounds, in particular carbolic acid, has been linked to his observation that the run-off from coal mines, which contained these compounds, neutralised the foul stench or bad air from waste bogs. Subsequently, Lister demonstrated that the use of carbolic acid spray during limb amputations helped to prevent the development of the dreaded and highly odiferous condition of gas gangrene in amputees.

However, this practice was not foolproof. Infections still killed patients operated on by men wearing waistcoats and nothing over their whiskered faces. In 1897 a French surgeon, Paul Berger, wore a mask while operating and strongly advocated their use by his colleagues. Six years later Alice Hamilton published a paper in JAMA imploring surgeons in teaching roles to wear masks as they described and carried out procedures in front of students. A year later a British doctor, Berkeley Moynihan, declared that unless they wore a mask, surgeons should remain silent while in the operating theatre. He likened their oral microbiota to the worst London sewage, and despaired that the meaning of the word aseptic had been forgotten. But the message about the importance of wearing a mask was largely ignored until something dramatic happened on the other side of the world.

In 1912, plague broke out in Manchuria, now known as Northern China, which was then a collection of both Chinese and Russian territories. The population was being rapidly decimated and the Chinese Imperial court called on a young doctor named Lien-teh Wu to try to halt the spread of the killer disease. Wu, who had studied medicine at Cambridge, proposed that the disease was being spread through the air, not by flea bite. To protect himself and others from becoming infected he designed a protective mask made of multiple layers of gauze, cotton and cloth that wrapped securely around a wearer’s face. The materials were cheap and readily obtainable and the mask easily assembled. This form of protection was adopted by medical staff, soldiers and even some of the general public. The advent of Spanish flu in 1918 provided a huge impetus for both mask wearing and and their mass production, based on Wu’s original design. Subsequently, the role of masks in protecting patients from contracting infection, whether from their doctor or others, and the reverse, to protect healthcare workers from their patients, was generally accepted and the wearing of masks in a variety of settings finally became common practice.

James Boren, the American humorist and writer, looked at mask wearing from a slightly different perspective. One of his quips goes as follows:

I got the bill for my surgery. Now I know why those doctors were wearing masks. Perhaps he could have reflected on the cost of doctors not wearing masks for both the doctors and their patients, rather than the cost to him of his surgeon’s services.

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