

Dr Tomoya Saito, research fellow at Keio University, looks at CBRN defence capability in Japan 15 years after the subway sarin attack in Tokyo

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Japan experienced several biological and chemical attacks and attempted attacks by the cult group Aum Shinrikyo in the 1990s. In particular, the Tokyo subway sarin attack in 1995 demonstrated a new type of successful scenario for the large-scale attack of a civil population in an urban area by a chemical agent. In the 15 years since this horrible terrorist act, how has Japan developed and improved CBRN terrorism preparedness? In this article, the capability development following the attack on civilians and the Japan Self Defence Forces (JSDF) will be reviewed.

On 20 March 1995, at around 8am, members of Aum Shinrikyo dispersed the nerve agent sarin in five subway vehicles in Tokyo. More than 5,500 people were affected and rushed to the hospital, and 12 died. The ambulances could transport only 463 victims, and most patients visited the hospital on foot, in taxis or private vehicles, etc. No primary decontamination was performed on-site and, more importantly, first responders and health care workers involved in the initial response were not wearing personal protective equipment. As a result, approximately ten per cent of fire department personnel who responded to the incident and 23 per cent of the hospital staff in St Luke's International Hospital which accepted 640 victims on the day experienced secondary exposure.

Although the police could identify the agent within two hours in its crime laboratory the fire department, which did not have instruments that could detect sarin at that time, announced the agent was acetonitrile in the first report based on the on-site detection. The Japan Ground Self Defence Force's (JGSDF) 32nd infantry regiment in Tokyo was dispatched as a disaster relief squad, with the support of three chemical protection units, in response to the request from the Governor of Tokyo for environmental decontamination. At that time, no official policy noted which entities should perform on-site decontamination, but the SDF performed the onsite decontamination using the five per cent caustic soda and the Fire Defence rinsed the decontaminated sites in water. The SDF confirmed the

completion of decontamination by doffing masks as well as using M8 detector paper and AP2C detectors.

The Subway sarin attack was an international wake-up call for a new type scenario, but it was not effective for the Japanese government. Although the attack revealed the necessity of training and equipment for detection, personal protection and decontamination, and co-operation between first responder agencies, governmental-level action did not start until the end of 1990s and the 9/11 attack. For example, the Model for Co-operation by Local Institutions Involved in NBC Terrorism Response issued by the executive board of the Japanese Government's Council on NBC Terror Countermeasures, which defines the primary role of each first

response organisation, was not published until November 2001.

As the Fire Defence service in Japan is organised at a municipal level, and there are 803 Fire Defence district headquarters over the country (as of 1 April 2009), their size and technical capability level may be different. Although the introduction and upgrading of NBC response equipment was started at the local level after the sarin attack, the anthrax attack in the United States in 2001 promoted them to the national level. To prepare for the Korea-Japan football World Cup in 2002, the Fire and Disaster Management Agency (FDMA) distributed 150 sets of level-A chemical protection suits, chemical and biological detection equipment, decontamination shower units and decontaminant



Hospital staff at a Tokyo exercise ©T. Saito

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disseminators to major fire department headquarters in major cities, including those hosting World Cup games. This cost approximately 1.7bn yen from the supplementary budget of FY2001. In addition, all emergency services were equipped with gas masks. After that, district fire departments were subsidised by the state to purchase level-A suits, biological detection equipment, a decontamination shower unit and a decontaminant disseminator from FY2002, and a hazmat response vehicle (Super Hazmat) from FY2004.

In FY2006, the FDMA established Advanced Rescue Teams (in 51 Fire Defence Headquarters of major cities) and Special Advanced Rescue Teams (in the Tokyo Fire Department and 16 HQs in government-designated cities) to strengthen their capability to respond to natural and man-made disasters all over the country. Under this effort, Advanced Rescue Teams or higher level teams are required to have equipment for responding to NBC events, such as chemical protective suits, level-A suits, radiation protection suits, toxic gas measuring instruments, decontamination showers and decontaminant disseminators; this would make them into units capable of responding to NBC disasters and operating in the hot zone. In addition to the equipment issued to the Advanced Rescue Teams, Special Advanced Rescue Teams are required to have special disaster vehicles for NBC events, and chemical and biological detectors.

The most advanced Fire Defence service in Japan is the Tokyo Fire Department (TFD). TFD is the largest Fire Defence service in Japan, staffed with 18,000 personnel and covering almost all areas of the Tokyo Metropolis. For NBC disaster measures, Hazardous Materials (Hazmat) Units were first launched in 1990, equipped with the level-A suit and analytical instruments. In 2002, in addition to the nine Hazmat Units, the Fire Rescue Task Force (FRTF), which is a highly specialised and dedicated unit for NBC events equipped with an inside-protected special disaster vehicles and a decontamination vehicle with three shower rooms, was launched in the 3rd Fire District Hyper Rescue. The FRTF was called out for 164 events in 2009. In addition to the annual three-day exercise in TFD, every district HQ performs NBC exercises events twice a year.

Although the CBRN preparedness of medical countermeasures and facilities in

hospitals is under review, most hospitals may have no, or very limited, capacity. Chemical substance analysers were installed in 73 emergency medical centres, prompted by several malicious chemical contamination incidents in FY1998. After the 9/11 attacks, gas masks, protective suits and decontamination facilities were installed in critical care centres using the supplemental budget of FY2001. Although the Ministry of Health, Labour and Welfare (MHLW) has provided the subsidy for purchasing basic equipment for CBRN disasters since FY2006 – such as chemical protective suits and decontamination facilities in critical care centres and core disaster hospitals – it is impractical for most hospitals to purchase them with their very limited budget under current economic circumstances. The Advanced Emergency Medical Centre of Nippon Medical School owns its own NBC medical command and decontamination vehicle, though it is a very exceptional case.

Preparedness for medical countermeasures is another issue. We have to consider the legal frameworks for emergency use of unlicensed products because, out of 45 licensed products for 37 CBRN agents in the US, only 26 (58 per cent) were licensed or available in equivalent products in Japan. A request for the fast track review even for a Mark-I kit was rejected recently.

The basic operation plan for medical response at the pre-hospital stage and at the critical care centre has been established by taskforces funded by the MHLW; the unified training programme for NBC disasters, meanwhile, is provided for the Disaster Medical Assistance Team (DMAT) as an advanced training course by the Japan Poison Information Centre (JPIC). Currently, every prefecture has at least one DMAT team trained in the NBC disaster course, but the legal framework to support deployment of DMAT to encounter NBC disasters is not well established.

A shift of emphasis from showering to dry decontamination to improve decontamination procedures is still under discussion. Pre-decontamination medical intervention is under trial in the field exercise of Exercises for Civil Protection, which raised many issues. For example, even if auto-injectors were available, emergency life-saving technician in the Emergency Medical Services are not allowed to administer antidotes to victims in the way UK paramedics are. In addition to establishing the legal framework,

DMAT should be trained to work in the warm zone.

Information on the police CBRN response capability is quite limited in public. At the time of the Tokyo subway sarin attack, the police did not have much expertise in responding to chemical weapons; they had to borrow chemical protective suits from the JSDF. After the incident, the police started to install chemical protective suits, detectors and decontamination instruments for the riot police unit in the prefectural police HQs, and to organise NBC terrorism response units.

Counter-NBC terrorism squads, which have a higher level of NBC response capability, were established in the Metropolitan Police Department and Osaka Prefectural Police Headquarters in FY2000, and in additional seven prefectural police headquarters after the 9/11 attacks. The NBC squads are equipped with a counter-NBC terrorism vehicles, chemical protective suits, biochemical protective suits, biochemical/chemical agent detectors, etc. The NBC squads belong to the riot police unit, except for the "NBC Terrorism Investigation Unit", which is dedicated to NBC events in the Metropolitan Police Department and which belongs to the Public Security Mobile Investigation Unit in the Public Security Bureau. The Squad's members are trained in the JGSDF Chemical School.

When any terrorist attack takes place, the roles of the police are to arrest the perpetrators, collect evidence and to rescue the victims. The NBC squads' mission is to advance to the site promptly and, through co-operation with relevant agencies, detect and remove causative substances, rescue victims and provide evacuation guidance. The Squad may also be responsible for the decontamination. The police are regularly conducting joint training with relevant organisations such as fire defence and SDF.

SDF had been prepared for C and RN agents, but not much for B agents. The JGSDF chemical school was established in 1956. Its subordinate chemical protection unit 101, which was dispatched during the Tokyo subway sarin attack and the Tokai village nuclear accident in 1999, have been the SDF's central capability for C and RN events. The chemical school is the only schedule-1 substance production facility in Japan. The chemical school also educates civilians, such as personnel from the police, fire defence, coastguard and SDF, on chemical defence. As any biological weapon activity was taboo due to the unfavorable

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legacy of Unit 731 in the Second World War, the SDF had not taken action for biological weapons before the incremental growth of threat by North Korea in the late 1990s and the US anthrax mailing attack. The improvement of anti-NBC weapons capabilities was included in the Mid-term Defense Programme from FY2001 and from FY2005 – a five-year plan which defines Japan's policy regarding defence capabilities. The Medium-to-Long-Term Defense Technology Outlook published in 2007 by the Technical Research and Development Institute (TRDI), Ministry of Defence (MoD), stated that Japan lacks measures against biological agents in particular. TRDI would overcome the technological challenges of realising detection and protection equipment for biological agents within five years.

An upgrade of the Chemical Weapon Defence Units into NBC Weapon Defence Units by installing biological alerting functions began in 2006. The JGSDF has a Chemical Weapon Defence Unit or an NBC Weapon Defence Unit, which are equipped with NBC reconnaissance vehicles (which are called "NBC vehicles" despite the fact they lack a biological detection function at this time), decontamination vehicles, chemical protection suits and biological and chemical detectors in every nine divisions and six brigades. The Chemical Protection Unit 101 also acquired biological alerting instruments and a biological reconnaissance vehicle, so was renamed the "NBC Weapon Defence Unit" in 2007. In 2008, this unit was re-formed as the Central NBC Weapon Defence Unit under the Central Readiness Force to have enhanced flexibility of operation. The Central Readiness Force also established the NBC Countermeasure Medical Unit equipped with a mobile biological laboratory and negative-pressure field wards, which is responsible for lab testing and treatment of victims. Handheld biological detection devices and newly-designed NBC reconnaissance vehicles which carry all NBC detection modules in one vehicle will be introduced within a few years. The research and development of portable automatic sensors for chemical agents, as well as decontamination sets, are also on the way.

The co-operation between the SDF and civilians were enhanced after the sarin attack, and is now promoted in the Exercise for Civil Protection. The difficulty posed by the need to operate the SDF onsite at the initial stage of an incident lies in how they would be dispatched and

operated under the law. Basically, if NBC weapons are used and considered as an armed attack, the SDF will conduct "defence operations" to counter the armed attack and rescue victims. If it is not categorised as an armed attack but an incident in which the general police alone cannot maintain public security, the SDF will conduct "public security operations" to suppress the armed attack and rescue victims co-operating with related agencies. Even if the incident does not fall into the category of these operations, the SDF will conduct "disaster relief dispatches" and "civilian protection dispatches" in response to the request from the local government to support related agencies such as information gathering on the damage, decontamination, transportation of victims and medical activities.

The SDF has never conducted defence operations, public security operations and civilian protection dispatches. It has, however, had much experience with disaster relief dispatches, under which the SDF were operating even before the subway sarin attack. Considering the difficulty of identifying the cause of an attack was terrorism, and these strict control systems which may take time for action, the SDF would be operated under the "disaster relief dispatch" at the initial stage and its major role would be the large-scale environmental decontamination, taking advantage of their capability in this area rather than rescuing victims. Its role would, however, be determined by a request from the local government.

The Law concerning the Measures for Protection of the People in Armed Attack Situations etc. (Civil Protection Law) enacted in 2004 aims to make the whole nation fully prepared for armed attack situations and emergency response situations, including NBC weapon attacks, and to thereby implement appropriately and promptly measures to protect the people in such situations. The Exercise for Civil Protection defined in this law has promoted the collaboration and co-operation between the police, the fire department, local government, the SDF and the national government, which will be expected in these situations, including NBC weapon attacks. Since FY2005, each of the 47 prefectures has experienced tabletop exercises or field exercises. A field exercise on chemical and biological terrorism has been performed, and one on an attack using radiological substances is planned for next January for the first time. Exercises for Civil Protection have also been used as

good opportunities to test the co-operation with hospitals and DMAT for providing on-site medical care and to try several new concepts such as a pre-decontamination medical care and mental health care.

The Okinawa G8 summit in 2000 and the 9/11 attacks, rather than the Tokyo subway sarin attack, were the national turning point in Japan to start preparing for CBRN events. Funding for preparedness has been event-based, however, such as for G8 summits and sports events. The Civilian Protection Law enacted in 2004 enhanced NBC preparedness in local government. First responders are better prepared than ever, but the hospitals and medical care are lagging relatively far behind. In addition to CBRN, medical care for "E" is another concern due to the lack of experience in our country.

Although the government created a position specifically dedicated to countermeasures against NBC threats in the Cabinet Secretariat for the first time last year, NBC issues are still vertically organised and fragmented at the governmental level. For better CBRN preparedness in Japan, more inter-departmental and inter-organisational collaboration and co-operation should be enhanced to maximise the limited resources in this field. For example, promoting R&D in this area, and collaboration between the military and civilians, should be necessary. Research and development is underway for mobile biological and chemical detection devices, stand-alone biological detection systems and level-A protection suits, funded by the MEXT. The challenge is the lack of facilities in our country at which to test these devices using real agents, however. JGSDF possesses a facility for chemical agents but does not have the capacity for R&D purposes.

The promotion of knowledge-sharing and networking experts by enhancing dialogue among stakeholders from the government, private industries and academia is now underway at Keio University Global Security Research Institute (at which I work as a project manager) under a Project for Science and Technology for a Safe and Secure Society funded by MEXT. It also provides a seminar series and workshops on the interdisciplinary issues in Chemical and Biological defence. Last but not least, more centralised leadership and long-term commitment at the governmental level is expected.