



Editorial on Laboratory-Acquired Incidents in Taipei, Taiwan and Singapore Following the Outbreak of SARS Coronavirus

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A novel emerging disease caused by the SARS coronavirus insidiously crept into the Asia Pacific region, beginning in November, in 2002 in Guangdong, China, then unrecognised as SARS. This was retrospectively diagnosed, and spread to Hong Kong, and from there to Vietnam, Singapore, Canada and Taiwan in February and March, 2003. Heroic efforts to contain the outbreak in each country led to these countries in turn being declared "SARS free" by the WHO. Taiwan being the last country infected, with the last known case having been detected on 15 June 2003, was declared SARS free in July 2003. However, this was only the end of the human to human transmission of SARS. What came next was a series of laboratory-acquired infections in laboratory staff; sequentially in Singapore (September, 2003), Taipei, Taiwan (December, 2003), and Beijing, China (December 2003 – January 2004). The genie had been let out of the box, inadvertently, and made these countries realize they had a laboratory biosafety crisis.

The events in the laboratory in Taiwan and Singapore have been submitted to this journal and will be presented in this quarter (Taiwan) and next quarter (Singapore). Events leading to the incidents and the significance of the events will be recounted. From the biosafety perspective, this was a unique opportunity to develop national and local biosafety standards with full support from the authorities. Together, they successfully worked to minimize the outbreak that not only led to health issues, but economic and emotional turmoil in the region. In all three countries affected, national standards or legislation has been implemented, and a flurry of activity to build high containment facilities has begun. These measures have gone hand-in-hand with training, communication, a determination to follow best procedures,

transparent incident reporting, and good medical surveillance. There was a lack in many of these areas that led to the laboratory incidents. The lessons learned from these incidents, which happened in high containment laboratories (BSL-3 in Singapore and BSL-4 in Taiwan) only underline the importance of the human aspects of any good biosafety program. One can not rely on good engineering and facilities (although the Singapore laboratory was eventually downgraded to a BSL-2 laboratory). Retrospectively, it was indeed fortunate that in both cases the infections were confined to a single laboratory worker in question. This was not the case in the Beijing incident, where 13 cases were reported in total to have been connected to the use of a BSL-2 laboratory, with community spread. One other thing to note is that a BSL-2, BSL-3 and BSL-4 laboratory was involved in each case, and that every one of the laboratory staff involved in the incident were research workers. No diagnostic laboratory has reported any laboratory incidents involving SARS coronavirus. This shows that it is not so much the secondary engineering in the containment facility (though important), which is of paramount importance, but that proper biosafety management, and more stringent oversight, especially of the research community is required. The one good thing that came out of these unfortunate incidents is that lessons learned from them have bolstered national, local and individual efforts to improve the situation, and a much healthier biosafety culture will be the result. These incidents therefore have been chronicled to encourage other laboratories, not affected, to have a critical look at their biosafety culture and biosafety measures in place, and to do it in a timely way, to prevent more unnecessary incidents like these from occurring.