

Twenty years of warning

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Twenty years ago, a Pulitzer prize-winning author, Laurie Garrett, wrote a book called *Betrayal of Trust*¹ which decried the breakdown of the global public health infrastructure. She chronicled and warned that the collapse of systems intended to prevent the spread of infectious diseases, gross inequities between the rich and poor, and failure to protect the environment and ecosystems, would lead to economic, social and political instability on a global scale. In an earlier book, *The Coming Plague*,² written in 1994, she warned about the emergency of recurrent eruptions of newly discovered emerging diseases. She complained that society tended to learn little from past mistakes and ignored the signs that resources were needed to support healthcare infrastructure, public health capacity, and basic human needs.

In November of 2002, a new strain of influenza coronavirus arose, called severe acute respiratory syndrome (SARS). It began in Guangdong province, China, and spread via Hong Kong and international air travel to dozens of countries over the next several months. By the time the outbreak had been curtailed, more than 8 000 people had become infected and 916 had died.³ It wasn't until well after the disaster that studies reported that the agent was transmissible through aerosols, and that the infectious virus could exist for several hours in the air. We also came to learn that healthcare workers comprised one fifth of the global cases.⁴

A number of important lessons were provided by the SARS outbreak. One was that hospitals were ill-prepared to track infected patients as they entered healthcare facilities, so it was difficult, if not impossible, to identify which staff or other patients had come in contact with SARS patients before they were diagnosed. Another lesson was that hospital ventilation systems were woefully inadequate to help protect workers and patients from SARS. Last, there was a misunderstanding of what personal protective equipment (PPE) was appropriate for nurses and physicians treating SARS patients, and the guidelines changed several times over the progression of the outbreak.

It is unspeakably disappointing that, after 20 years of mesmerising advancement in areas such as information technology, communications, and other specialties, our medical and public health systems in many countries – even the most advanced – have lagged far behind. The lessons learned from the SARS disaster were forgotten and never adequately addressed, and we are now plagued by the same problems during the COVID-19 pandemic. Hospitals cannot accurately identify, track and segregate infected patients and identify asymptomatic individuals; as a result, healthcare workers and other patients are being infected. The inability of hospital ventilation systems to minimise the concentration and spread of airborne virus aerosols allows the agents to spread throughout the environment.

Even though inadequate nursing protocols and failure to use PPE properly were identified as primary causes for the spread of SARS in 2003, neither the US Centers for Disease Prevention and Control (CDC) nor the World Health Organization (WHO) are able to agree on what PPE should be worn for healthcare workers assigned to COVID-19 patients. In a 2005 study by Yassi et al. on the lack of understanding of effective controls against SARS, it was reported that, "it is likely that a pandemic strain of influenza could produce similar or worse effects if these issues are not addressed".⁵ Studies of nursing practice since the SARS outbreak have shown that only 20–90% of healthcare workers practise correct PPE

compliance.^{6,7} In a study in 2008, only 60% of healthcare workers received respirator fit-testing and training annually, as required.⁸ We seem to have learned very little over the past 20 years in the area of infection control, and occupational health and safety for healthcare practitioners.

Occupational hygiene is the profession dedicated to the protection of worker health and safety. Despite the fact that communicable diseases contribute 9% of occupational fatalities, on average, and up to 30% in developing nations,⁹ and hospital-acquired infections occur in up to 25% of hospital patients globally,¹⁰ there has been little expansion of the use of occupational hygiene principles or practice in healthcare. Occupational hygienist expertise in ventilation, contamination control, environmental monitoring, and personal protection is a recognised asset to general industry and is seen as an economic benefit, yet it often goes underutilised by hospital medical teams and administrations. Only the largest hospitals tend to have occupational hygienists on their staff. Smaller facilities hire consultants only when they are obliged to do so by legislation, or perceive a need and have the funds.

If there is a bright side to this pandemic, it might be that, in future, there will be an increased interest in the services and expertise that occupational hygienists can bring to infection control and protection of health workers.

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The history of the International Occupational Hygiene Association

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Occupational hygiene is the discipline of anticipating, recognising, evaluating and controlling health hazards in the working environment with the objectives of protecting worker health and wellbeing, and safeguarding the community at large. The focus is on prevention of worker injuries and illnesses.

THE EARLY YEARS

In early April 1987, at the University of Nottingham, England, a group of 15 occupational hygienists from various countries met to discuss the creation of an international association of the profession. Under the leadership and vision of Dr Jeffrey Lee, a group of national professional associations, came together to exchange knowledge and advance the profession.

At this first meeting, the group agreed that the goals of the proposed association would be:

- To promote and develop occupational hygiene around the world
- To promote the exchange of occupational hygiene information among organisations and individuals
- To encourage and advance the development of the occupational hygiene profession
- To promote high standards of ethical practice in occupational hygiene

Shortly after this initial meeting, representatives from 10 of the leading national organisations met on 2 June 1987 in Montreal, Canada, to take the discussions forward. The group toasting the event is pictured opposite. During this meeting, it was also formally agreed that the name of the group should be the International Occupational Hygiene Association (IOHA). Again under the guidance of Dr Lee, the aforementioned goals of the Association were formalised.

In April of 1988, the first board meeting of the IOHA was held in Nottingham, England. Representatives from several countries, representing different associations attended, and the first order of business was to elect Dr Lee as chair of the board. During this meeting, the first governance structure and guidelines for the Association were discussed, but it took an additional three years to finalise the details of how the organisation would work and to create the associated governance documents. The first official acceptance of the Association's bylaws was signed into effect by the board in April 1989.

ORIGINAL MEMBERS

Professional organisations approved as members at the time of the board meeting in 1988 were:

- The American Conference of Governmental Industrial Hygienists
- The American Industrial Hygiene Association
- The Australian Institute of Occupational Hygienists
- The British Occupational Hygiene Society
- The Canadian Registration board for Occupational Hygienists
- The Dutch Occupational Hygiene Society
- The Finnish Occupational Hygiene Association



Representatives of 10 leading national occupational hygiene Associations gathered in Montreal, Canada, in 1987 to discuss the founding of the IOHA Photograph: unknown

- The Institute for Occupational Hygienists
- The Italian Association of Industrial Hygienists
- The Swiss Occupational Hygienists Association
- The Swedish Industrial Hygienists Association
- The Swedish Occupational Hygiene Association

From its creation in 1987, the IOHA has grown to 36 member organisations (Table 1), representing more than 20 000 occupational hygienists worldwide. The IOHA continues to be an international voice of the occupational hygiene profession, through its recognition as a non-governmental organisation (NGO) by both the ILO (International Labour Organization) and, until recently, the WHO (World Health Organization).

CONFERENCES AND MEETINGS

Over the past 33 years, board meetings have been conducted in numerous member nations. They are typically held twice a year and, now, if board members cannot attend meetings in person, they have the option of participating via telephone or the Internet. An effort is always made to coincide the IOHA board meeting with national association-related professional conferences. This supports the profession in that country and shares knowledge as broadly as possible. Accordingly, the IOHA has also conducted international scientific conferences every two or three years in various regions over the past three decades. A list of past IOHA conferences and locations is provided in Table 2.

COMMUNICATIONS

For several years, the IOHA has published a newsletter, up to three times per year. In 2004, the IOHA created a website (www.ioha.net) to make information about the organisation available. Older newsletters are also available on the website, in addition to current scientific and other relevant information. For several years, a version of the IOHA newsletter, called the *Global Exposure Manager* (GEM), was published periodically in the *Chemwatch Journal*; however, since September 2019, the GEM has been published in the bimonthly issues of *Occupational Health Southern Africa* (OHSA). The GEM articles published in OHSA are also available on the IOHA website.

AWARDS

In 1997, the IOHA created a Lifetime Achievement Award; Jeffrey Lee (USA) was the first recipient. Since then, there have been seven additional awardees (see Table 3).

In 2018, the IOHA created the Collaboration Award to honour work between occupational hygiene organisations and other countries or organisations. This is a means to share ideas, promote occupational hygiene, and improve worker health worldwide. The first recipients of this award, in 2018, were the Brick Kiln Committee of Workplace Health Without Borders (WHWB) and the Global Fairness Initiative (GFI), through their joint work on hazards faced by brick kiln workers. They worked together to establish a Centre at Kathmandu University in Nepal to collect data on sampling, results of analysis, medical information, child labour, and hazardous exposures in brick kilns. Through this international database, researchers around the world can better co-ordinate information on health and safety issues in brick kilns. The Centre will provide valuable insights into working conditions and child labour in brick kilns, effective exposure measurement techniques, and solutions for controlling exposure and protecting worker health.

The IOHA has a permanent secretariat in South Africa and an executive committee consisting of a president, a president-elect, a past-president and a secretary/treasurer. Currently, these positions (in 2019–2020) are filled by Rene Leblanc (Canada), Thomas P Fuller (USA), Peter-John (Jakes) Jacobs (South Africa), and Ruth Jimenez (Spain). Past-presidents of the IOHA constitute an impressive list of professionals in the field of occupational hygiene (see Table 4).

Each member association designates one person to serve on the board (the IOHA does not place a time limit on this position and prefers long-term appointments). The IOHA holds two board meetings a year and an international scientific conference every two to three years. The last IOHA conference took place in the USA in September 2018. The next conference will take place in Korea in October 2021.

AFFILIATIONS WITH OTHER ORGANISATIONS

The IOHA is working (via the ILO and, until recently, the WHO) to raise the profile of occupational hygiene worldwide, and to show that we can offer a cost-effective way to reduce the burden of illness and disease in workplaces. The IOHA also co-operates with other

Table 1. Current members of the IOHA

Name of organisation	Acronym	Country
American Conference of Governmental Industrial Hygienists	ACGIH	USA
American Industrial Hygiene Association	AIHA	USA
Asociación de Higienista de la Republica Argentina	AHRA	Argentina
Argentine Society of Occupational Hygiene	SAHIO	Argentina
Australian Institute of Occupational Hygienists	AIOH	Australia
Belgian Society for Occupational Hygiene	BSOH	Belgium
Associação Brasileira de Higienistas Ocupacionais	ABHO	Brazil
British Occupational Hygiene Society	BOHS	UK
Conseil Canadien d'Agrément des Hygiénistes du Travail	CCAHT	Canada
Central Industrial Hygiene Association	CIHA	India
Asociación Colombiana de Higiene Ocupacional	ACHO	Colombia
Sociedad Colombiana de Higienistas Ocupacionales	SCHO	Colombia
Nederlandse Vereniging voor Arbeidshygiëne	NVvA	The Netherlands
Société Française des Hygiénistes du Travail or French Occupational Hygienists Society	SOFHYT	France
Suomen Työhygienian Seura	STHS	Finland
Deutsche Gesellschaft für Arbeitshygiene	DGAH	Germany
Hong Kong Institute of Occupational and Environmental Hygiene	HKIOEH	China
Indonesian Industrial Hygiene Association	IIHA	Indonesia
Italian Industrial Hygiene Association	IIHI	Italy
Japan Occupational Hygiene Association	JOHA	Japan
Japan Association for Working Environment Measurement	JAWE	Japan
Korean Industrial Hygiene Association	KIHA	South Korea
Malaysian Industrial Hygiene Association	MIHA	Malaysia
Asociación Mexicana de Higiene Industrial	AMHI	Mexico
New Zealand Occupational Hygiene Society	NZOHS	New Zealand
Norwegian Occupational Hygiene Association	NYF	Norway
Occupational & Environmental Health Society of Singapore	OEHS	Singapore
Occupational Hygiene Society of Ireland	OHSI	Ireland
Asociación Peruana de Higiene Ocupacional	APEHO	Peru
Polskie Towarzystwo Higienistów Przemysłowych	PTHP	Poland
Asociación Española de Higiene Industrial	AEHI	Spain
Southern African Institute for Occupational Hygiene	SAIOH	South Africa
Swedish Association of Occupational and Environmental Hygiene	SYMF	Sweden
Schweizerischen Gesellschaft für Arbeitshygiene, Société Suisse d'Hygiène du Travail	SGAH-SSHT	Switzerland
Taiwan Occupational Hygiene Association	TOHA	Taiwan
Vietnamese Industrial Hygiene Association	VIHA	Vietnam

international organisations, such as the ICOH (International Commission on Occupational Health) and the IEA (International Ergonomics Association).

In recent years, the IOHA has entered into memorandums of understanding (MoUs) with a variety of affiliate organisations. In 2009, the IOHA created an MoU with the Occupational Hygiene Training Association (OHTA) to promote the development and implementation of a common international framework for occupational hygiene training. In 2018, the IOHA signed a five-year agreement with WHWB to share the common mission to prevent occupational injuries and illnesses. The MoU serves as a pledge that WHWB and the IOHA will work in partnership to maximise efforts to reach those in greatest need of occupational health, occupational hygiene, and occupational safety resources and services. This will aid progress towards the combined WHWB and IOHA vision, viz. 'A world in which workers, their families, and communities do not get ill because of their work, and a safe and healthy working environment for all'. Also in 2018, the IOHA and the European Network of Education and Training in Occupational Safety and Health (ENETOSH) created an MoU of support and collaboration. This encourages the development of a culture of prevention related to occupational safety and health in Europe, and globally. The plan is to encourage worldwide collaboration on education and training in the field of occupational safety and health. Since the initial agreement, the IOHA and the ENETOSH have held several meetings and joint sessions at international conferences.

Table 2. Location of IOHA Conferences, 1992–2020

Year	City	Country
1992	Brussels	Belgium
1994	Hong Kong	China
1997	Crans-Montana	Switzerland
2000	Cairns	Australia
2002	Bergen	Norway
2005	Pilanesberg National Park	South Africa
2008	Taipei	Taiwan
2010	Rome	Italy
2012	Kuala Lumpur	Malaysia
2015	London	UK
2018	Washington, D.C.	USA
2021 (October)	Daegau	South Korea

Table 3. IOHA Lifetime Achievement Awards

Year	Name	Country
1997	Jeffrey Lee	USA
2000	R. Jerry Sherwood	UK
2002	Bernice Goelzer	Brazil
2005	David Grantham	Australia
2008	Kurt Lechnitz	Germany
2010	Brian Davies	Australia
2010	Trevor Ogden	UK
2012	Michael Guillemin	Switzerland
2014	Noel Tresider	Australia
2018	Roger Alesbury	UK

THE FUTURE

The IOHA's mission is to enhance the international network of occupational hygiene associations that promotes, develops and improves occupational hygiene worldwide, providing a safe and healthy working environment for all. The strategic goals are:

1. To promote occupational hygiene
2. To improve occupational hygiene capabilities and practises
3. To enable effective networking and knowledge management
4. To provide robust governance

The IOHA is concerned that there appears to be a perception, in the developed world, that occupational health and safety issues have largely been resolved. The demand for undergraduate studies in occupational health is diminishing and several universities have stopped offering courses. At the same time, perhaps due to globalisation and the export of 'dirty' industries, the occupational health challenges facing economically-developing regions are increasing rapidly. The IOHA is addressing the need for occupational hygiene capacity through strong educational and training initiatives especially designed to transfer occupational hygiene knowledge and skills to where they are most needed.

Additional information regarding the IOHA organisation and its activities can found on the website (www.ioha.net). Specific questions regarding IOHA history or this article can be directed to Thomas Fuller at tpfuller1@gmail.com.

Table 4. Presidents of the IOHA

Year	President	Country
1988–1989	JS Lee	USA
1989–1990	PE de Silva	Australia
1990–1991	M Guillemin	Switzerland
1991–1992	V Riveira Rico	Spain
1992–1993	WH Krebs	USA
1993–1994	A Burdorf	The Netherlands
1994–1995	L Lillienberg	Sweden
1995–1996	RF Herrick	USA
1996–1997	TGE Gillanders	UK
1997–1998	R Viinanen	Finland
1998–1999	B Davies	Australia
1999–2000	P Oldershaw	UK
2000–2001	VE Rose	USA
2001–2002	V Lechnitz	Germany
2002–2003	D Zalk	USA
2003–2004	H Jackson	Australia
2004–2005	T Spee	The Netherlands
2005–2006	TW Tsin	Hong Kong (China)
2006–2007	R Ferrie	South Africa
2007–2008	R Ferrie	South Africa
2008–2009	T Grumbles	USA
2009–2010	D Cottica	Italy
2010–2011	L Hamelin	Canada
2011–2012	N Tresider	Australia
2012–2013	J Naerheim	Norway
2013–2014	CC Chen	Taiwan
2014–2015	J Perkins	USA
2015–2016	K Niven	UK
2016–2017	DY Park	South Korea
2017–2018	A Hiddinga	The Netherlands
2018–2019	P-J Jacobs	South Africa