

**WORLD ENVIRONMENTAL HEALTH DAY: SEPTEMBER 26**  
**SPANISH ENVIRONMENTAL HEALTH SOCIETY (SESA)**  
**COVID-19 AND ENVIRONMENTAL HEALTH**

The Spanish Environmental Health Society (SESA), as an active member of EFEH and IFEH, will take part in the celebration of the World Environmental Health Day and fully subscribes this year's theme: "ENVIRONMENTAL HEALTH, A KEY PUBLIC HEALTH INTERVENTION IN PANDEMIC DISEASE PREVENTION." SESA would like to take advantage of the opportunity presented by the commemoration of this date to underscore SESA's contribution as a scientific society to our society in the fight against the COVID-19 pandemic.

On December 31, 2019, the Municipal Health and Sanitation Commission of Wuhan (Hubei Province, China) reported a cluster of 27 cases of pneumonia of unknown etiology. In all of these cases, including seven severe ones, exposure can be traced to a wholesale seafood, fish, and live animal market in Wuhan City.<sup>1</sup> On January 7, 2020, Chinese authorities identified a new type of virus from the *Coronaviridae* family as the causative agent behind the outbreak, which was subsequently named SARS-CoV-2, and the disease it caused, COVID-19.<sup>1</sup>

On March 11, 2020, the WHO declared a global pandemic.<sup>1</sup>

Spain is being hit very hard by both the virus and the disease. At present we are already seeing in a second wave of contagion.

Both clinical and public health scientific societies immediately began to work to devise strategies for action. Apart from collaborating and supporting the lines of work laid down by Spanish health authorities, their essential mission consists in mobilizing their human resources to take concrete actions which are defined by means of homogeneous protocols of action and based at any given moment in time on current scientific knowledge.

Hence, this is what SESA has been focusing on: working hand in hand with the Subdirectorate-General for Environmental Health of the Spanish Ministry of Health's Directorate-General for Public Health and drawing up guidelines for action for all environmental health technicians as a whole.

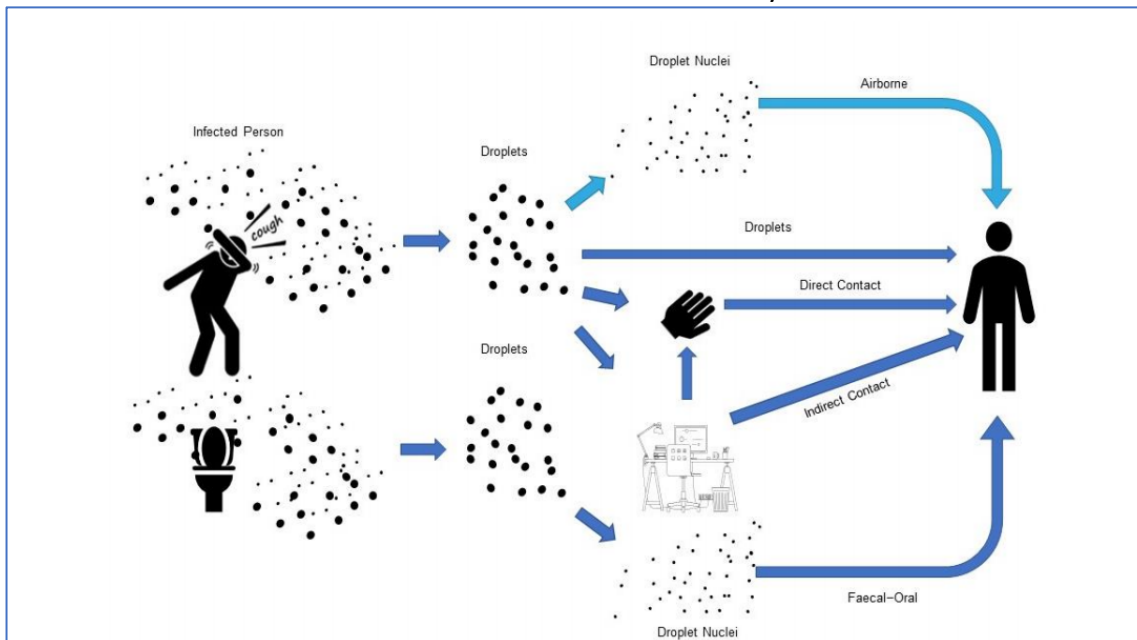
In order to be able to tell what the most effective actions from an environmental health point of view will be, the first thing one needs to know is the agent, whether it be chemical, physical or biological, followed by its mechanisms of exposure (or transmission, as the case may be).

In this case the agent is SARS-CoV-2, a coronavirus that belongs to the RNA (ribonucleic acid) family of viruses. Coronaviruses are called thus because the viral particle forms a

characteristic ‘crown’ of spicular proteins around the lipid envelope. This envelope makes them relatively sensitive to desiccation, heat, and alcoholic detergents and disinfectants, such as bleach, which dissolve the lipids and inactivate the virus.<sup>2</sup>

Furthermore, the scientific literature soon revealed that direct transmission occurred from an infected person to a healthy person via droplets smaller than 5  $\mu$  that the former expels when speaking, coughing, sneezing, and so on. The most indirect route via fomites resulting from the virus’ survival on certain surfaces was also taken into consideration (Figure 1).<sup>1-3</sup>

**Figure 1.** WHO. SARS-CoV-19 transmission mechanisms via droplets and indirect contact (in dark blue). In lighter blue, mechanisms of transmission of SARS-CoV-1 and other influenza viruses which have not been seen in SARS-CoV-2 yet.



Source: courtesy of Francesco Franchimon. Own translation.

SARS-CoV-2 remains viable on copper, cardboard, stainless steel, and plastic surfaces for 4, 24, 48 and 72 hours respectively when kept at 21-23 °C and 40% relative humidity.<sup>4</sup> In another study conducted at 22 °C and 60% humidity, the virus was no longer detected on printer or tissue paper surfaces after 3 hours; after 1 to 2 days when applied on wood, clothing or glass; and after 4+ days when applied on stainless steel, plastic, banknotes and surgical masks.<sup>5</sup>

On the other hand, several studies have shown that SARS-CoV-2 is relatively sensitive to soap and also to those disinfectants which are most often used both at home (bleach, alcohol) and in hospitals (quaternary ammonium compounds, chloroxylenol) under the right conditions of concentration and contact time.<sup>5</sup>

All this information has been used as the basis for the first preventive actions that were defined at the environmental health level, i.e. washing/cleaning and disinfecting hands and surfaces using specific detergents and disinfectants and specifying the appropriate conditions for their correct application (concentrations and contact times).<sup>6</sup> It has also been useful in supporting the benefits of heat treatment, particularly of clothing, textiles and tableware.<sup>7</sup>

With this in mind, the activities that SESA has carried out so far and proposed carrying out to fight the virus from an environmental health standpoint are as follows:

1. Devising washing/cleaning and disinfection protocols for different establishments, in particular nursing homes.<sup>8</sup>
2. Issuing a document entitled “COVID-19. Estrategia desde la Salud Ambiental. Situación de contención.”<sup>9</sup>

This document already sets forth specific actions for containing the coronavirus—washing/cleaning and disinfection—but also addresses the topic of ozone generators and disinfection tunnels, which has been so controversial.

It also collects all of the WHO’s suggestions about the following matters:

- Drinking water: According to the WHO, there is no evidence of there being a risk of coronavirus transmission via drinking water.
  - Wastewater: The wastewater from people suffering from COVID-19 is discharged into sewer systems and ends up in water treatment plants, where it is treated. The WHO highlights that this good management process results in the inactivation of coronaviruses.
  - In addition, the WHO recommends monitoring all those installations at risk of seeing outbreaks of legionellosis more closely so as to prevent comorbidity with COVID-19.
  - Prevention of accidents in the home: confinement and mixing cleaning and disinfecting products (bleach...) can cause chemical accidents: bleach and vinegar release toxic chlorine gas; bleach and ammonia, chloramines; bleach and ethyl alcohol, hydrochloric acid, et cetera.
3. Standing against the use of ozone generators and disinfection tunnels whether by means of chemicals or ultraviolet lamps.<sup>10</sup>

Together with other Latin American scientific societies, such as the Latin American Society for Environmental Health (SIBSA), SESA has released a document recommending not to use devices for spraying chemicals on people.

4. Releasing, in view of the Spanish Government's proposal to reopen some hotels in support of hospitals ('medicalized hotels') and giving logistics support to food, drug, oil derivatives and other product distribution companies in the provision of their essential services ('essential hotels'), a document entitled "Guía de recomendaciones higiénico-sanitarias para los hoteles medicalizados y los hoteles abiertos para servicios esenciales" with the aim of ensuring that some health and hygiene guidelines be observed in these hotels in order to ensure their occupants would stay healthy.<sup>11</sup>

5. As the country moved towards the end of the lockdown, thinking it appropriate to lay down some environmental health guidelines that could be put into practice to control the spread of the coronavirus afterwards. SESA published a document entitled "COVID-19. Estrategia desde la Salud Ambiental II. Situación de desconfinamiento."<sup>12</sup>

The most salient aspect of this document is that it looked into making a concerted monitoring and control effort in nursing homes and shelters for other vulnerable people, which had been battered by the disease. Apart from that, the document reiterated the importance of cleaning and disinfecting:

- Homes and public spaces.
- Health infrastructures and facilities:
  - Drinking water
  - Wastewater
- Recreational water facilities:
  - Swimming pools, water parks, spas, and the like
  - Seaside and inland swimming areas
  - Installations at risk of experiencing legionellosis outbreaks
- Air conditioning units: risk prevention

6. As a result of the alarm raised by the eventual start of a.c. units all over Spain at the start of the summer, working together with the Spanish Society for Public Health and Health Administration (SESPAS) to draft a document entitled "Pronunciamiento conjunto de SESA y SESPAS sobre los sistemas de aire acondicionado en locales de pública concurrencia y la COVID-19" to refute the fallacies that had begun to circulate in this regard.<sup>13</sup> Moreover, these scientific societies believe that air conditioners help to lessen the impact of high temperatures— especially on the elderly.

7. The Official Charter of Pharmacists of Madrid asked SESA for help in informing its members about two things of concern to them: ozone generators and air conditioners. Hence, SESA prepared a document entitled "COVID-19.-ozonizadores y aires

aconicionados,” which was well received and widely distributed—so much so that other Spanish charters of pharmacists saw it fit to send it to their own members (with the Madrid Charter’s permission).<sup>14</sup>

8. Releasing, in collaboration with the General Council of Pharmaceutical Associations, during the summer a document entitled “Medidas preventivas y recomendaciones sanitarias para la apertura de piscinas y playas” to inform and bring peace of mind to the users of swimming pools and beaches.<sup>15</sup>

9. As we have seen, among all the measures taken to fight against the coronavirus, much emphasis has been placed on washing/cleaning and disinfection. Among the most important disinfectants are those intended for domestic use: bleach, ethyl alcohol, and hydrogen peroxide. But health authorities, however, recommended using them in concentrations that required some skill to prepare them. To this end, the General Council of Pharmaceutical Associations, again with SESA’s help, issued a guide called “COVID-19. Cómo preparar soluciones para la desinfección de superficies para uso por el público en general”.<sup>16</sup>

10. Webinars: SESA has participated in several webinars with the aim of laying down very clear guidelines in connection with ozone generators and disinfection tunnels (coordinated from Bolivia), water hygiene and air conditioning (coordinated by SESA), and public health challenges in the 21st century—which of course focused on COVID-19 (coordinated by the Academy of Pharmacy of Murcia).

11. “Miracle” products against COVID-19: sodium chlorite.

SESA issued a newsletter recommending Madrid pharmacists to inform their customers—should they require it—of the potential risks of taking some chlorine derivatives, specifically sodium chlorite, in the hopes of warding off the disease, something which some ‘gurus’ were encouraging.<sup>17</sup>

12. The latest issue of the Environmental Health Magazine (Revista de Salud Ambiental) ran an article summarizing all the contributions which environmental health has made as of today, and still is making, in the fight against the pandemic. It is titled is “COVID-19. Higiene del agua, climatización y saneamiento en tiempos del COVID-19: problemas sobre problemas.”<sup>18</sup>

13. Jointly drafting with the Subdirectorate-General for Environmental Health of the Ministry of Health's General-Directorate for Public Health several documents that have been released over these months on drinking water and wastewater; swimming pools, beaches and bathing areas; and the airborne transmission of the virus via droplets, aerosols and contaminated objects (Transmisión del SARS-CoV-2 por gotas respiratorias, objetos contaminados y aerosoles (vía aérea) – Revisión de evidencias).<sup>19</sup>

All these documents are freely available at SESA’s website: [www.sanidadambiental.com](http://www.sanidadambiental.com)

14. Acting, from the moment pandemic was declared, in an advisory capacity before both public bodies and private entities to answer many of the questions on health and hygiene they had at the time. This is still one of SESA's main functions at this time of renewed transmission of the virus. SESA has expressed its views in all those scientific and media forums in which it has been asked to take part. An example of this is the last interview SESA's Chairwoman gave not too long ago.<sup>20</sup>

Granada/Madrid, September 17, 2020  
Isabel Marín Rodríguez. Chairwoman of SESA  
José M<sup>a</sup> Ordóñez Iriarte. Outgoing Chairman of SESA

## References

1. Spanish Ministry of Health. Technical-scientific information. Coronavirus disease (COVID-19). Updated on April 17, 2020. (Accessed on September 2, 2020). Available at: <https://www.mscbs.gob.es/profesionales/saludPublica/ccayes/alertasActual/nCov/documentos/ITCoronavirus.pdf>
2. Kampf G., Todt D., Pfaender S., et al. "Persistence of coronaviruses on inanimate surfaces and their inactivation with biocidal agents." J. Hosp. Infect. 2020. Doi.org/10.1016/j.jhin.2020.01.022
3. World Health Organization. "Modes of transmission of virus causing COVID-19: implications for IPC precaution recommendations." Scientific brief, March 29, 2020. (Accessed on September 12, 2020). Available at: <https://apps.who.int/iris/bitstream/handle/10665/331616/WHO-2019-nCoV-Sci-Brief-Transmission-modes-2020.2-eng.pdf?sequence=1&isAllowed=y>
4. van Doremalen N., Morris D.H., Holbrook M.G., et al. "Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1." N. Engl. J. Med., 2020; DOI: 10.1056/NEJMc2004973.
5. Chin A.W.H., Chu J.T.S., Perera M.R.A., et al. "Stability of SARS-CoV-2 in different environmental conditions." The Lancet Microbe, 2020. Published online on April 2, 2020. (Accessed on September 12, 2020). Available at: <https://reader.elsevier.com/reader/sd/pii/S2666524720300033?token=E3C2967E45C1D7C557FC2DEF8DFB1A57EA79C36472A7E2879127FD6A9A09C156C0073AE4A2DDEA8F39B28B90C31589F5>
6. World Health Organization. "Cleaning and disinfection of environmental surfaces in the context of COVID-19." Interim guidance, May 15, 2020. (Accessed on Wednesday, May 20, 2020). Available at: <https://apps.who.int/iris/bitstream/handle/10665/332096/WHO-2019-nCoV-Disinfection-2020.1-eng.pdf?sequence=1&isAllowed=y>
7. World Health Organization. "Operational considerations for COVID-19 management in the accommodation sector." Interim guidance. (Accessed on April 6, 2020). Available at: <https://apps.who.int/iris/handle/10665/331638?locale-attribute=es&>.

8. Directorate-General for Public Health. Community of Madrid, Spain. “Pautas de desinfección de superficies y espacios habitados por casos en investigación, cuarentena, probables o confirmados de COVID-19. Viviendas, residencias, espacios de pública concurrencia (centros comerciales, supermercados, etc.) y transportes de viajeros.” (Accessed on September 15, 2020). Available at: <http://www.madrid.org/bvirtual/BVCM050100.pfd>
9. Sociedad Española de Sanidad Ambiental (SESA). “COVID-19. Estrategia desde la Salud Ambiental I. Situación de contención.” (Accessed on September 15, 2020). Available at: <https://www.sanidadambiental.com/2020/04/28/covid-19-estrategia-desde-la-salud-ambiental-situacion-de-contencion/>
10. Sociedad Española de Sanidad Ambiental (SESA). “Posicionamiento de la Sociedad Española de Sanidad Ambiental sobre el uso de biocidas, túneles y arcos desinfectantes de pulverización sobre las personas en la pandemia del covid-19.” (Accessed on September 4, 2020). Available at: <https://www.sanidadambiental.com/wp-content/uploads/2020/04/POSICIONAMIENTO-SESA-SOBRE-EL-USO-DE-BIOCIDAS.pdf>
11. Sociedad Española de Sanidad Ambiental (SESA) and Sociedad Española de Medicina Preventiva, Salud Pública e Higiene (SEMPSPH). “COVID-19: Recomendaciones higiénico-sanitarias para los hoteles medicalizados y los hoteles abiertos para servicios esenciales.” (Accessed on September 12, 2020). Available at: <https://www.sanidadambiental.com/wp-content/uploads/2020/04/HOTELES-MEDICALIZADOS.pdf>
12. Sociedad Española de Sanidad Ambiental (SESA). “COVID-19. Estrategia desde la Salud Ambiental II. Situación de desconfinamiento.” (Accessed on September 12, 2020). Available at: <https://www.sanidadambiental.com/wp-content/uploads/2020/05/SALUD-AMBIENTAL-Y-COVID-19-Desconfinamiento.pdf>
13. Sociedad Española de Salud Pública y Administración Sanitaria (SESPAS) and Sociedad Española de Sanidad Ambiental (SESA). “Pronunciamento conjunto de SESA y SESPAS sobre los sistemas de aire acondicionado en locales de pública concurrencia y la COVID-19.” (Accessed on September 12, 2020). Available at: <https://sespas.es/2020/05/25/posicionamiento-sesa-sespas-sobre-los-sistemas-de-aire-acondicionado-en-locales-de-publica-concurrencia-y-la-covid-19/>
14. Colegio Oficial de Farmacéuticos de Madrid. “COVID-19. Ozonizadores y aires acondicionados.” (Accessed on September 4, 2020). Available at: <https://www.cofm.es/recursos/doc/portal/2015/04/24/covid-19-ozonizadores-y-aires-acondicionados.pdf>
15. Consejo General de Colegios Farmacéuticos and Sociedad Española de Sanidad Ambiental (SESA). “Medidas preventivas y recomendaciones sanitarias para la apertura de piscinas y playas.” (Accessed on September 4, 2020). Available at: <https://www.portalfarma.com/Profesionales/consejoinforma/Paginas/2020-farmaceuticos-salud-publica-medidas-preventivas-playas-piscinas-covid-19.aspx>
16. Consejo General de Colegios Farmacéuticos and Sociedad Española de Sanidad Ambiental (SESA). “Cómo preparar soluciones para la desinfección de superficies para uso por el público en general.” (Accessed on September 4, 2020). Available at:

<https://www.portalfarma.com/Profesionales/campanaspf/Asesoramiento-salud-publica/infeccion-coronavirus-2019-nCoV/Documents/como-preparar-soluciones-para-desinfectar-superficies-covid-19.pdf>

17. Colegio Oficial de Farmacéuticos de Madrid. “Derivados clorados para combatir el SARS-CoV-2, otro bulo.” (Accessed on September 4, 2020). Available at: <http://blog.cofm.es/derivados-clorados-combatir-covid-bulo/>

18. Crespí Rotger S., Ordoñez Iriarte J.M. “COVID-19. Higiene del agua, climatización y saneamiento en tiempos del COVID-19: problemas sobre problemas.” Rev. Salud Ambient., 2020, pp. 20(1):21-29.

19. -Vargas Marcos F., Ruiz de Adana M., Marín Rodríguez I., Moreno Grau S. “Transmisión del SARS-CoV-2 por gotas respiratorias, objetos contaminados y aerosoles (vía aérea). Revisión de evidencias.” (Accessed on September 15, 2020). Available at: <https://www.sanidadambiental.com/wpcontent/uploads/2020/09/Transmisi%C3%B3n-del-SARS-CoV-2-por-gotas-respiratorias-objetos-contaminados-y-aerosoles.pdf>

20. Marín Rodríguez I. ConSalud.es. interview. (Accessed on September 15, 2020). Available at: <https://www.sanidadambiental.com/2020/09/15/entrevista-a-nuestra-presidenta-no-puede-haber-desarrollo-sostenible-sin-que-la-salud-ambiental-este-en-la-agenda-politica/>