International Commission on Microbiological Specifications for Foods

Commission Internationale pour la Définition des Caractéristiques Microbiologiques des Aliments

of the / de l'

INTERNATIONAL UNION OF MICROBIOLOGICAL SOCIETIES

UNION INTERNATIONALE DES SOCIETES DE MICROBIOLOGIE

ICMSF[1] opinion on SARS-CoV-2 and its relationship to food safety[2]

Date of publication: 03 September 2020

A. The COVID-19 Pandemic

Globally, millions of people have been infected by the coronavirus, SARS-CoV-2, resulting in the illness referred to as COVID-19. The SARS-CoV-2 virus is a coronavirus that spreads easily. In humans, it can cause a complicated illness, involving many organs in the body and causing symptoms including respiratory, blood-circulation and/or organ failures, loss of smell/taste sensations, diarrhoea, and fever as some of the major symptoms.

At the time of writing, there are no vaccines or treatments for COVID-19. Avoiding exposure to the virus is the major strategy to prevent potential infection. Public health measures to prevent humans from being infected and to minimize human-to-human spread of the disease include:

- Control measures, e.g., physical distancing; avoiding physical interaction using physical barriers, protective equipment (face masks, face shields), personal hygiene etiquette such as frequent hand washing and/or hand sanitizing.
- Clinical measures, e.g., monitoring for symptoms of COVID-19 and/or testing specifically for the presence of SARS-CoV-2, and when necessary responding by isolation and/or quarantine[3].

[1] ICMSF is a global Non-Governmental Organization and Observer to Codex Alimentarius. Its goal is to contribute actively to development and communication of scientific concepts to help to reduce the incidence of microbiological foodborne illness and food spoilage. Views of ICMSF and its members/consultants on COVID-19 and its impact on food safety as well as the importance of general and food hygiene in illness mitigation are posted here.

[2] Disclaimer: This opinion is valid on the date of issue but may change due to developments after that date; this opinion is the responsibility of the collective of members of the International Commission for Microbiological Specifications of Foods (ICMSF) and not endorsed by any of the institutions with which these members are individually or professionally associated.

[3] Both isolation and quarantine work to prevent people from potentially and unknowingly infecting others with the SARS-CoV-2 virus. Isolation is reserved for those who are already sick and/or have tested positive for COVID-19 infections, but do not require hospital admission for medical care. Quarantine is for people who are asymptomatic, but who may be infected with COVID-19. Quarantine keeps these people away from others, so they do not unknowingly infect anyone https://www.nicd.ac.za/wp-content/uploads/2020/05/Guidelines-for-Quarantine-and-Isolation-in-relation-to-COVID-19.pdf; https://www.cdc.gov/coronavirus/2019-ncov/if-you-are-sick/quarantine.html. Note that isolation and quarantine may be used in reverse order in some jurisdictions. While definitions differ, the end-result is the same.

The changes in lifestyle and measures to reduce the spread of the SARS-CoV-2 virus continue to have major disruptive impacts such as reduced economic activity, loss of income, loss of jobs and reduced freedom of movement. In addition, food trade and food supply chains have seen major disruptions due to the impact on the health of the workforce operating along the farm-to-fork supply chain.

Whilst much information and insight into the pathogenicity/epidemiology and ecological dynamics of this coronavirus are still being researched, below are the latest scientific and technical insights that ICMSF considers relevant for those professionals operating in and along food supply chains, as well as governments overseeing food safety matters.

The ICMSF believes that it is highly unlikely that the ingestion of SARS-CoV-2 will result in illness; there is no documented evidence that food is a significant source and/or vehicle for transmission of SARS-CoV-2.

It is vital that one differentiates a hazard from a risk, i.e., the mere presence of an infectious agent on food does not necessarily mean that an infection will occur.

B. COVID-19 and impact on human health

COVID-19 is primarily a respiratory illness. Illness may vary from very mild to severe, with case fatality ratio estimates varying country to country from <0.1% to >25% (WHO, 2020a)[4]. In principle, the virus causes illness only when it gains access to the lungs and other body tissues through the respiratory tract and the surface mucosal tissues (e.g., eyes, nose lining). While ingestion of the virus could potentially result in COVID-19 infection, oral transmission via food consumption has not been reported.

While COVID-19 is a general human health concern affecting many people certain situations may present opportunities for the coronavirus to infect humans and spread within a business operation or community. In this regard, the SARS-CoV-2 virus is an important occupational hazard that may affect the health of employees and their availability and ability to work. When workers are affected by COVID-19, they should not attend work for a period of time consistent with medical/government advice as a mitigation measure to prevent further spread of the virus.

To combat the virus and its spread, it is important to understand the science behind the COVID-19 and the characteristics of this coronavirus. Science is evolving rapidly, and key insights are important clues for health professionals and businesses, for instance:

[4] World Health Organization (WHO) 2020a.
https://www.who.int/publications/i/item/WHO-2019-nCoV-Sci-Brief-Mortality-2020.1

- SARS-CoV-2 is primarily transmitted from person-to-person over close distances via droplets/aerosols from the nose and/or mouth. The transmission of virus particles is especially problematic indoors where poor ventilation may exist.
- Another less likely possibility is that the virus spreads indirectly via cross-contamination from surfaces. Virus particles have been reported to survive for hours to days on surfaces (Van Doremalen et al., 2020)[5]. However, the chance of transmission through inanimate surfaces appears to be very small (Goldman, 2020)[6].

C. COVID-19 and Food Safety

SARS-CoV-2 should not be considered a food safety hazard since a true food safety hazard enters the human body with food via the gastro-intestinal (GI) tract, where it can infect organs/tissues elsewhere in the human body. A good example is the Hepatitis A virus, which enters the bloodstream after infecting the human intestinal epithelium and ultimately establishes infection in the liver and causes foodborne disease. In addition, it is important that one differentiate a food hazard from a food safety risk, i.e., the mere presence of an infectious agent in a food does not necessarily translate into human infection.

Despite the many billions of meals consumed and food packages handled since the beginning of the COVID-19 pandemic, to date there has not been any evidence that food, food packaging or food handling is a source or important transmission route for SARS-CoV-2 resulting in COVID-19.

Considering that there are to date, no proven cases or scientific associations between food consumption and COVID-19, it is highly unlikely that SARS-CoV-2 constitutes a food safety risk. There are relatively few reports of SARS-CoV-2 virus being found on food ingredients, food products, and packaging materials. In many instances, such reports are not specific as to how the virus was identified, what amount of virus was found and whether the virus was viable and infectious. As the methods used for identification of the virus are primarily gene-based, what most of these reports show is the presence of RNA of the virus. In that sense, the reports show that a hazard to human health may be present. They do not show that there actually is a hazard present (i.e., viable virus) or that it is a risk to human health via ingestion or handling of the food. Viruses present on food or food packaging also will lose viability over time. Following a risk-based approach, it is very unlikely that such contamination would result in infection.

[5] Van Doremalen et al., 2020. DOI: 10.1056/NEJMc2004973
[6] Goldman, 2020. DOI: 10.1016/S1473-3099(20)30561-2

However, whilst there is currently no evidence linking food or food packaging as a source of a cross contact infection, it is prudent to emphasise to food producers, manufacturers and handlers the importance of using good food hygiene practices to minimise any possibility of food or food contact surfaces as a vector for SARS-CoV-2.

The RNA of SARS-CoV-2 can be detected in sewage water and has been used in a number of countries for the early detection of geographic upsurges in COVID-19 (Peccia, et al., 2020[7]; WHO, 2020b[8]). While SARS-CoV-2 virus or the viral materials (protein or gene material) can be found in the stools or faeces of people with COVID-19, at present there is no documented evidence that SARS-CoV-2 can survive passage through the human stomach.

The mere presence of SARS-CoV-2 may be mistakenly perceived as causing a food safety concern. Undoubtedly, COVID-19 has caused major disruptions in the production, trade and distribution of food to the extent that food security is being affected in several regions around the world. Low- and middle-income countries are amongst the most challenged. Whether these disruptions are caused by worker illness, closure of operations, concerns of food as vehicles of transmission, or other reasons not directly food related, may not always be understood or acknowledged. Unfortunately, the perception is created that food safety may be at risk, but again there is no evidence to date that it is.

D. COVID-19 and trade

Because of perceived food safety and food transmission issues, some countries are restricting food imports, testing imported products, and/or asking for COVID-19 freedom statements/attestations. ICMSF believes that these controls are not scientifically justified, as there is no documented evidence that food is a significant source and/or vehicle for transmission of SARS-CoV-2. The focus for food businesses should be on protecting food workers, consumers and restaurant patrons from becoming infected by person-to-person SARS-CoV-2 spread.

The discovery of genetic traces of SARS-CoV-2 on food may raise concerns about food safety, but this does not indicate a risk for public health and should, therefore, not be a basis for restricting food trade or initiating a food recall.

[7] Peccia, et al., 2020. DOI : 10.1101/2020.05.19.20105999
[8] WHO 2020b. https://www.who.int/publications/i/item/WHO-2019-nCoV-sci-brief-environmentalSampling-2020-1

E. COVID-19 and mitigating public health risks

SARS-CoV-2 is an important occupational hazard to human health and mitigation measures are required to prevent or minimize its general public health impact. Since there are currently no vaccines or treatments, only preventative risk mitigation measures are possible. Most effective preventative risk mitigation measures are those that prevent an individual from being exposed to the virus and from spreading the virus.

For individuals in general, the following is recommended:

- Monitoring symptoms of COVID-19, staying home and isolating for a sufficient period of time when ill, or quarantining when exposed or suspected to be ill, so as not to expose other individuals and to avoid spreading the virus outside the home.
- Avoiding proximity to other individuals by keeping a minimum physical distance. While WHO advises a minimum physical distance of 1 metre, some governments require 1.5 or 2 metres or 6 feet.
- Practicing strict personal hygiene, regularly washing hands with soap and, where possible, sanitizing with suitable fluids/gels (e.g., alcohol-based sanitizer containing a minimum of 60% v/v alcohol or another proven antiviral agent at effective concentrations).
- Cleaning and disinfection of high contact surfaces is an important preventative measure to help reduce the potential exposure of individuals to the coronavirus.
- Wearing non-medical face masks. These are being required or recommended in many countries (mostly where or when keeping the minimum physical distance is difficult), but proper face mask wearing and face mask handling are important. Some types of masks may reduce virus transmission (source control) and offer some protection, while not preventing transmission. Importantly, the inappropriate use of face masks may make them a source of contamination. Wearing face masks should not give a false sense of security; physical distancing is still encouraged even when masks are worn.

F. COVID-19 and mitigating occupational health risks

SARS-CoV-2 is a major hazard to worker health and any type of food business should therefore take measures to protect its workforce from illness and safeguard the ability of workers to work, as well as to contribute to preventing and minimizing the spread of the virus within and outside the business operations.

Effective (preventative) mitigation measures in many instances are comparable to those mentioned for the general public, but they need to be tailored to the specifics of the operation. These can be complemented with particular measures according to the specific nature of the business as well as environmental and working conditions. Businesses should validate whether measures are effective and should

regularly verify whether the measures are implemented appropriately in daily operations. Where regulated requirements exist, these must be complied with.

In food business operations, effective measures can best be built upon and integrated into the good hygienic practices and food safety management systems (such as those based on HACCP) that food businesses may already have implemented to ensure hygiene in food operations and consumer safety of the products produced, handled or manufactured. The good hygienic practices adopted are the foundation for ensuring food safety and form a strong basis for minimizing person-to-person spread and cross-contamination of SARS-CoV-2 in food operations. Notably, existing personal and food hygiene measures need to be reviewed, reinforced and possibly strengthened in terms of staff activities (in all premises including toilets, canteen), transportation, operation logistics and layout, use of protective equipment (e.g., masks), and management of potentially contaminated non-food waste.

The overall food safety management system that tailors good hygienic practices and additional food safety measures to the specifics of the food operation may already include measures such as physical separation of activities (zoning), as well as cleaning and disinfection of tools, equipment and environment and sanitizing of hands. This system should be reviewed for its effectiveness in minimizing the spread of SARS-CoV-2 in the operation.

The food safety management system should be complemented by measures that adequately address occupational safety concerns of workers and by measures that prevent the virus from spreading from person-to-person in the food business operation, including:

- Instruction of employees in recognizing the symptoms of COVID-19 and ensuring ill employees do not come to work, self-reporting of symptoms, establishing methods of contact tracing, temperature monitoring at entrances.
- Physical separation of workers and other staff in all premises of a business operation. Keeping a minimum of a 1-metre distance (or a larger distance mandated or advised by local governments).
- Placing a greater focus on more regular cleaning and disinfection of high contact surfaces.

Scientific information on the risks of transmission and best operating practices in business environments is continually evolving.

The following processing environment risk factors have been postulated to increase the opportunity for person-to-person spread in food businesses:

- Humidity, cold temperatures that promote virus survival, limited air flow, physical exertion, talking and shouting and many opportunities for close grouping of people.

In addition, the following factors are also important for controlling SARS-CoV-2 in food operations:

- Installing physical barriers between workers and/or workbenches.
- Face masks with or without full-face visors.
- Ensuring that airflow patterns allow for sufficient movement of appropriately filtered or fresh air.
- Cleaning and disinfection measures that ensure control of the coronavirus and minimize cross-contamination, focusing on high contact points.
- Training of food workers and other staff on the importance of personal hygiene over and above the training for food safety related hygiene. Instructions on personal hygiene and the use of protective equipment need to be tailored to the responsibilities of individuals in the operation and on proper use to optimize protection.

When non-medical face masks are considered for worker protection, inappropriate face mask use and handling should be avoided. A sound mask management protocol should be established for the business operation. Workers need to be instructed on proper face mask handling practices and procedures that render protection, but avoid masks becoming a source of contamination. It should be clear to workers that face masks are not a substitute for physical distancing, which is still required even when masks are worn.

While food and occupational health safety measures target different aspects of consumer safety and worker/public health, the two together are complementary and, with a well-integrated system, responsible food businesses should be able to contribute significantly to protecting the health of their employees and consumers, as well as to their responsibility to help control the spread of SARS-CoV-2 in society.

Emphasis should be placed on preventative measures for occupational exposure, based on a hierarchy of risk- and science-based measures such as body temperature monitoring, pre-entry health and contact declarations, prohibitions on plant entry, reinforced personal hygiene/cleaning and sanitation (especially high contact points), physical distancing, reduced personnel density and face mask wearing.

G. Sampling and testing for SARS-CoV-2in food or food operations

Based on reports of (Inter-) government organizations such as WHO, FAO (Food and Agriculture Organization), the transmission of SARS-CoV-2 has not been associated with food. Therefore, there are no foods that should be considered a risk or warrant consideration as a vector for SARS-CoV-2.

Given the lack of evidence associating food or food packaging with the transmission of SARS-CoV-2, ICMSF does not advise food end product or environmental testing for the SARS-CoV-2 virus for reasons of food safety

assurance. As SARS-CoV-2 does not pose a food safety risk, systematic sampling and testing for the virus is of no added value for food safety purposes. Furthermore, because of the uncertainties and inconsistencies around expected analytical results (RNA detection only), sampling plans and subsequent corrective actions do not represent the best use of food processing facility resources.

When workers in a food processing facility are found to be COVID-19 positive, mitigation should follow government requirements and guidelines. SARS-CoV-2 is a serious occupational safety (health) hazard and needs to be well controlled in any type of business operation for the protection of workers and to ensure business continuity. In the event that workers test positive for COVID-19, a business should review its operations to assess whether the preventative COVID-19 risk mitigation measures designed for the operation have been properly implemented, are being followed and are effective. It may be prudent to review worker conditions outside the business operation, even when already done in designing the COVID-19 measures for the business operation at hand; conditions may have changed or may be different from what was originally considered in the design.

As with any emerging microbiological threat to human health, business operators must keep abreast of new information to ensure that they have up-to-date knowledge of the science and technologies that are needed to deal with preventing and mitigating microbiological concerns.
