

# WHY DO WE ASSESS RISK?

When we assess the risk of something towards someone, we are trying to understand two key things:

- 1) How likely it is that the person will be harmed (probability of harm occurring);
- 2) How much harm the person could experience (severity of harm).

## WHAT IS A RISK ASSESSMENT?

A risk assessment is the process of understanding and characterising the nature and likelihood of a harmful effect from certain activities to individuals or populations.

In the context of bioaerosols, a risk assessment can evaluate the likely hazards from bioaerosol-generating activities and assess the probability that they can cause an adverse health effect such as infection, allergy or sensitisation.


Risks are often characterised using a matrix, where one side of the scale ranks the likelihood that harm will occur, and the other side ranks the severity of the harm that can occur. These scores are then combined to give an overall risk rating of low, medium, or high.

Known as a Risk Assessment Matrix, this scale can be used to answer the two points mentioned above (How likely is it that someone will be harmed? How much harm could someone experience?). Each point is given a number, and the two numbers are multiplied together to give the overall risk. The number can be cross checked on the scale to give the level of risk (low-high).

**Here is an example of a 5-point Risk Assessment Matrix (1 is for 'unlikely to happen/no injury', 5 is for 'certain to happen/can result in death'). Not all Risk Assessments Matrices use a 5-point scale, but this is the most common form used.**

		CONSEQUENCES				
		Insignificant (1) No injuries	Minor (2) First aid treatment	Moderate (3) Medical treatment	Major (4) Hospitalisation	Catastrophic (5) Death
LIKELIHOOD	<b>Almost certain (5)</b> Often occurs (once a week)	Moderate (5)	High (10)	High (15)	Catastrophic (20)	Catastrophic (25)
	<b>Likely (4)</b> Could easily happen (once a month)	Moderate (4)	Moderate (8)	High (12)	Catastrophic (26)	Catastrophic (20)
	<b>Possible (3)</b> Could happen or have known it to happen (once a year)	Low (3)	Moderate (6)	Moderate (8)	High (12)	High (15)
	<b>Unlikely (2)</b> Has not happened yet but could happen (once every 10 years)	Low (2)	Moderate (4)	Moderate (6)	Moderate (8)	High (10)
	<b>Rare (1)</b> Conceivable but only in extreme circumstances (once in 100 years)	Low (1)	Low (2)	Low (2)	Moderate (4)	Moderate (5)

**Figure 1:** Five-point Risk Assessment Matrix. Reproduced from [kamagroup.org/2018/08/24/risk-matrix](http://kamagroup.org/2018/08/24/risk-matrix)



Generally speaking, if something is considered a moderate, high or catastrophic risk, we should avoid it. However, we can reduce the risk by putting some actions in place that will protect the individual or people from harm.

### **An example**

A person suffering from cancer and undergoing treatment is sitting in a waiting room next to two people who have the flu. The likelihood of the cancer patient getting flu is possible or likely, especially as their immune system is weakened. The severity of the flu for the cancer patient would be ranked as moderate to major as they would likely require treatment or hospitalisation if they contracted it. In the worst case, their risk is ranked as catastrophic.

### **We can reduce this risk by putting actions in place:**

- Seat the cancer patient in another room in the hospital;
- Ask all patients to wear a face covering;
- Ensure that people with the flu are instructed not to attend the hospital unless medically necessary.

With these actions in place, we can reassess the risk. The likelihood of the cancer patient catching the flu is now reduced to unlikely or possible, which, in turn, reduces the risk rating to moderate. It is only through assessing the risk that we can put actions in place to reduce that risk.

## **MITIGATING RISK**

As mentioned, actions can be taken to lower the risks of someone getting hurt from a particular hazard. This is called risk mitigation. When it comes to bioaerosols, there are four main groups of actions we can take to help us reduce risk:

- 1) Removing the hazard or removing the person(s) at risk
- 2) Putting equipment and/or barriers in place or changing the way we do things to reduce exposure (i.e., washing hands)
- 3) Communicating/making people more aware of the risks
- 4) Wearing protective clothing

You can use one or a combination of actions as part of a 'risk mitigation plan'.

### **Take COVID-19 as an example:**

- 1) **Remove the hazard or person at risk** – people are told to stay at home and not go into work or school.
- 2) **Equipment, barriers, behaviour change** – people are told to wash hands, keep 2 metres away from other people, sanitise/clean surfaces regularly, and use lateral flow tests.
- 3) **Communicate** – there are lots of posters and adverts to make people aware of the dangers and what they can do to protect themselves e.g., the 'Hands, Face, Space' campaign.
- 4) **Protective clothing** – people are asked to wear face coverings or face shields.