



Describing the HBA Regulations' Basic Risk Assessment Requirements and Process

1. Definitions



"**biohazard**" means any potential laboratory source of harm caused by biological agents, microbial by-products or metabolites;

"**biological agent**" means any microorganism, microbial **by-products** or **metabolites**, cell or **organic material with plant, animal or human origin**, including any which have been genetically modified;

"**microorganism**" means a microbiological entity, cellular or non-cellular, capable of replication or transferring genetic material;

"**competent person**" means a person who has, in respect of the work or task to be performed, the required knowledge, training, experience and, where applicable, qualifications specific to HBAs;

Confusion with Haz Chem Agents?
eg cotton dust, grain dust?

There is going to be a need for training
for people with these competencies
(every employer is likely to need at
least one competent person?)

1. Definitions



"HBA" means a hazardous biological agent which may cause an infection, allergy or toxicity or otherwise create a risk to human health, subdivided into the following groups:

- a) Group 1 HBA**, an HBA that is **unlikely** to cause human disease;
- b) Group 2 HBA**, an HBA that **may** cause human disease and be a hazard to exposed persons, which is **unlikely to spread** to the community and for which effective prophylaxis and treatment is usually available;
- c) Group 3 HBA**, an HBA that **may** cause severe human disease, which presents a serious hazard to exposed persons and which may present a **risk of spreading** to the community, but for which **effective prophylaxis and treatment** is available; and
- d) Group 4 HBA**, an HBA that **cause severe** human disease and is a serious hazard to exposed persons and which may present a **high risk of spreading** to the community, but for which **no effective prophylaxis and treatment** is available;

2. Scope of Application



2. (1) Subject to sub regulation (2), these Regulations apply to every employer or self-employed person at a workplace where—

- (a) an HBA is produced, processed, used, handled, stored or transported; or
- (b) exposure to an HBA may occur.

(2) Regulations 8, 14, 15, 16 and 17 **do not apply** to an employer or self-employed person at a workplace where the exposure is restricted to a Group 1 HBA.

8. Medical Surveillance

14. Labelling, Packaging,
Transporting & Storage

15. Disposal of HBAs

16. DOEL HBA Health &
Safety Tech Committee

17. Offences & Penalties

unlikely to cause human disease

This opens the scope of
application to every workplace!

3. Classification of HBAs



See Annexure A

3. (1) Biological agents must be assigned a classification of **Group 1**, **Group 2**, **Group 3** or **Group 4** according to hazard and categories of contaminant by the chief inspector in consultation with the HBAs health and safety technical committee.
- (2) **Where a biological agent has not been assigned a classification** as contemplated in subregulation (1), the employer or self-employed person must [provisionally classify](#) that biological agent in accordance with subregulation (3), having regard to the nature of the biological agent and the properties of which he or she may reasonably be expected to be aware and must without delay [notify the chief inspector](#) of the provisional classification and the reason therefor. The chief inspector may make a decision based on the recommendation of the HBAs technical committee.
- (3) When provisionally classifying a biological agent, the employer or self-employed person must [conduct a risk assessment and assign that biological agent to one of the groups](#) and if there is doubt according to its level of risk of infection as to which of two alternative groups would be most appropriate, the biological agent must be assigned to the higher of the two.

6. Risk assessment for HBAs (1)



6.(1) A **self-employed person** must conduct and document the risk assessment to determine if any person could be exposed to an HBA.

(2) An **employer** must—

- (a) **conduct and document the risk assessment** to determine if any person could be exposed to an HBA; and
- (b) ensure that the HBA risk assessment contemplated in paragraph (a) is conducted by a **competent person**.

(3) When conducting the risk assessment, as contemplated in subregulation (1) and (2), the employer or self-employed person must take into account, as a minimum, the following matters:

- (a) The **nature of the HBA** and the possible **route of exposure**;
- (b) **where** the HBA might be present and in **what form** it is likely to be;
- (c) the **nature of the work** and work processes;
- (d) current **control measures in place**, effectiveness of control measures and any reasonable deterioration in, or failure thereof; and
- (e) what **effects the HBA can have on an employee**, including **pregnant, immunocompromised and vulnerable employees**.

Note distinction between self-employed person and employer.

6. Risk assessment for HBAs (2)



(4) An **employer or a self-employed person** must conduct the risk assessment on the basis of all available information, including—

- (a) **classification of the HBA** into the relevant risk group according to its level of risk of infection as contained in **Annexure A**;
- (b) recommendations from the **manufacturer, supplier** or a **competent person** regarding additional **control measures** necessary in order to protect the health of persons against such agents as a result of their work;
- (c) information on **diseases that may be contracted** as a result of the activities at the workplace;
- (d) potential **allergenic, infectious or toxic effects** that may result from the activities at the workplace; and
- (e) knowledge of **diseases** from which employees might be suffering and **which may be aggravated** by conditions at the workplace.

For an “**employer**”, this must be done by a “competent person”.

Does this mean an employee vulnerability assessment, or does this just refer to common chronic diseases...

(5) An employer must, in terms of the risk assessment-

- (a) **consider the recommendations** identified in the risk assessment; and
- (b) develop a **documented action plan** for the implementation of the recommendations.

(6) An employer must review the assessment required by subregulation

- (a) at **intervals not exceeding 24 months**;
- (b) **forthwith**, if—
 - (i) the previous assessment is no longer valid;
 - (ii) there has been a change in a process involving an HBA;

(7) The employer must ensure that **all employees**, the relevant health and safety representative and health and safety committee are **informed of the results of the risk assessment**, *who may comment thereon*.

Another document to be inspected by the DOEL inspectorate...

The Risk Analysis Procedure:



Systematic gathering of all relevant information about exposures, risks, control measures, workplaces, the employees, their tasks, systems of work, processes and work practices.

Gathering of information:

- by observation;
- using existing records;
- oral questioning;
- reviewing the technical and trade literature;
- visiting the area(s).

Building of a cohesive picture of the workplace, the hazards and associated risk(s) that exist or could exist or develop in the future.

Once completing the first steps in the risk analysis, the next step in the assessment would be to establish the "Risk Rating" for each particular task.

Routes of Transmission:



CONTACT

- Direct contact
- Indirect contact

DROPLET TRANSMISSION

- Coughing, sneezing, talking and during procedures such as suctioning.
- Conjunctiva, nasal mucosa or the mouth
- Droplets do not remain suspended in the air
- Droplets do not travel more than one metre

AIRBORNE TRANSMISSION

- Small particles (droplet nuclei) that remain suspended in air for long periods of time have a far greater potential for spreading disease than large droplets.
- Few organisms are carried out by this route, the most important being *Mycobacterium Tuberculosis*, *Covid-19* and the viruses causing *measles* and *chicken pox*.

COMMON VEHICLE TRANSMISSION

- Transmission by items such as food, water, devices and equipment.
- Normal hygienic practices and proper sterilisation or disinfection of equipment should make this type of spread a rare event in certain workplaces e.g. kitchens.

VECTOR-BORNE TRANSMISSION

Vectors such as mosquitoes, ticks, flies, cockroaches, fleas etc. if encountered in the workplace could cause outbreaks of diseases.



Reservoir: the source of the infectious agent: any contaminated part of a human being or of an animal, soil, water or object,



Portal of exit: for contamination to happen, the biological agent has to get out of the reservoir or has to be accessible,



Mode of transmission: direct (inhalation or contact), semi-direct (transmitted on dirty hands) or indirect (the biological agent uses a carrier: insect, contaminated instrument, etc.),



Portal of entry: respiratory tract, digestive tract, intact or damage skin: previous injury or via a contaminated instrument or mucus,



Potential host: the worker at his/her work station.

Breaking a link at any point will reduce the risk of infection!

Use the Hierarchy of controls!



Severity x Probability = Risk Ranking

HEALTH EFFECT / SEVERITY RATING:

Indicates the degree of harm.

Considers:

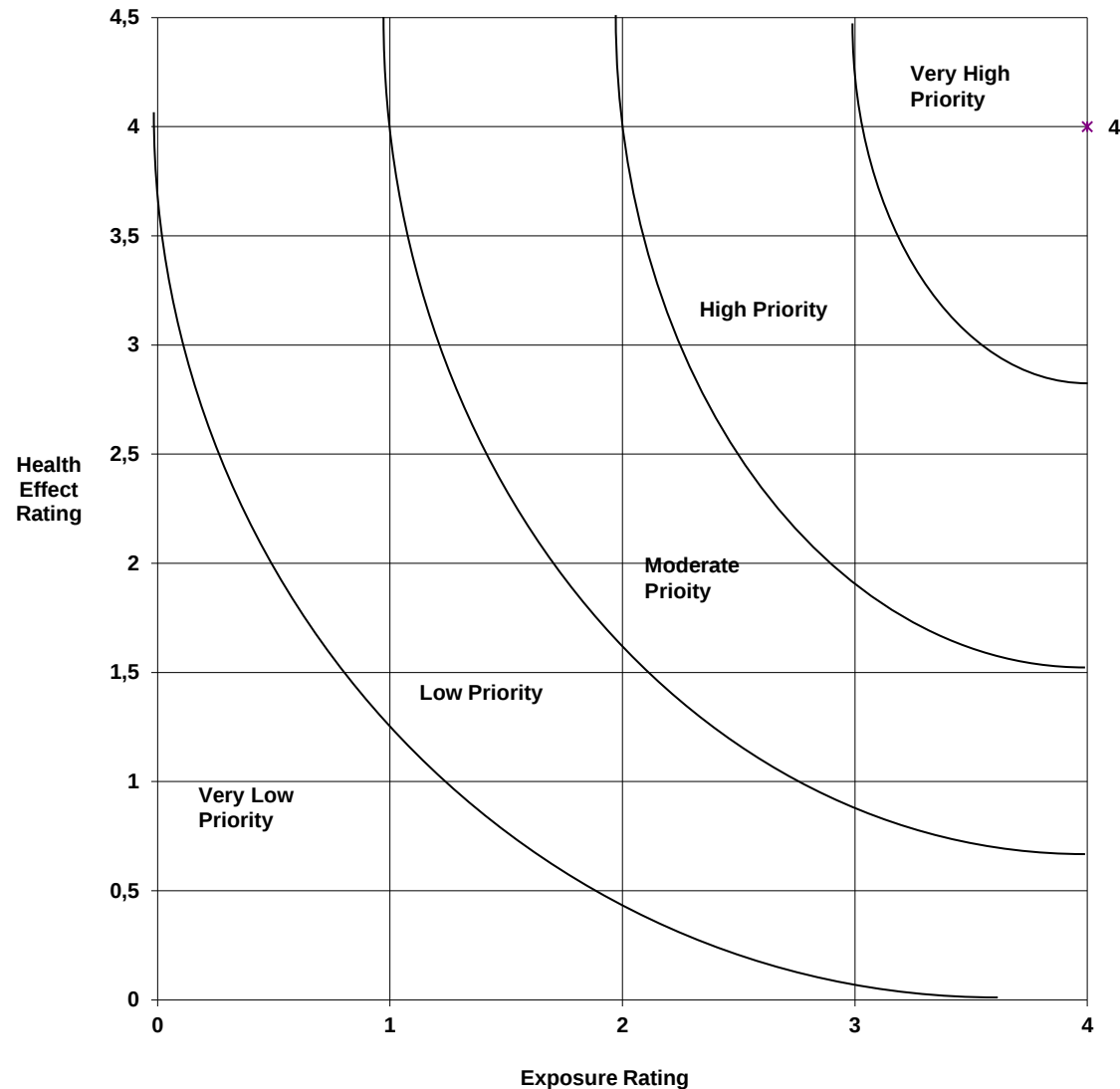
1. The nature of the process
2. The HBA group
3. Health effects

EXPOSURE PROBABILITY RATING:

Is a scientific estimate of the probable extent of a worker's exposure. Considers:

1. Route of entry
2. Potential dose
3. Duration of exposure
4. Frequency of exposure
5. Existing control measures

Basic Risk Assessment Model – Risk Ranking Charts



RISK RATING = HEALTH SEVERITY x EXPOSURE PROBABILITY

Example: Health Severity (3) x Exposure Probability (2) = Risk Rating (6), i.e. Medium Risk

RISK RATING MATRIX									
Health Severity	4.5	2.25	4.5	6.75	9	11.25	13.5	15.75	18
	4	2	4	6	8	10	12	14	16
	3.5	1.75	3.5	5.25	7	8.75	10.5	12.25	14
	3	1.5	3	4.5	6	7.5	9	10.5	12
	2.5	1.25	2.5	3.75	5	6.25	7.5	8.75	10
	2	1	2	3	4	5	6	7	8
	1.5	0.75	1.5	2.25	3	3.75	4.5	5.25	6
	1	0.5	1	1.5	2	2.5	3	3.5	4
	0.5	0.25	0.5	0.75	1	1.25	1.5	1.75	2
	0	0.5	1	1.5	2	2.5	3	3.5	4
		Minimal		Moderate		High		Very High	
		Exposure Probability							

Key:

>10.5
 10.5 - 6.25
 6 - 3.5
 3 - 1.75
 <1.5

Very High Risk
 High Risk
 Medium Risk
 Low Risk
 Very Low Risk

Medium to High Risk



Low to Medium Risk



NOTE: Where exposure probability is not sufficiently low to warrant a "Low" or "Medium" risk, those 'Risk Ratings' may be displayed as "Low to Medium" and "Medium to High" Risks, respectively.



Risk Assessment Outcomes:

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Low Risk (Compliant)	Moderate Risk (Provisionally Compliant)	High Risk (Non-Compliant)
1. Good removal of stale air, and 2. Good replacement of fresh clean air, and 3. Adherence to maximum occupancy rate, and 4. Low vocalisations and low metabolic demand, and 5. CO₂ below 800 ppm	1. Insufficient removal of stale air, or 2. Insufficient supply of fresh clean air, or 3. Exceedance of maximum occupancy rate, or 4. Some vocalisation (talking loudly or shouting) or 5. Higher than normal metabolic demand (some hard work), or 6. CO₂ between 800 ppm and 1000 ppm	1. Poor removal of stale air, and / or 2. Poor replacement of fresh air, and /or 3. Relatively high occupancy rate, and / or 4. Frequent loud talking / shouting and / or 5. Significant metabolic demand (e.g. hard work or gym), and / or 6. CO₂ exceeding 1000 ppm

GreenFlag Certified (Yes / No):

GreenFlag Certification is awarded subject to the following provisions:

Basic Risk Assessment Model – Example (Food Handling)



DESCRIPTION OF RISK			
HBA of Concern	HBA Group	Potential Exposure Points / Sources	Route of Exposure
S. Aureus Salmonella E.coli	2	- Contaminated work surfaces - Handling Raw Meat - Contact with infectious customers when serving food - Cross Contaminations of foods	Contact, Droplet, Common vehicle transmission
EXISTING CONTROL MEASURES			ATTENTION REQUIRED?
Engineering Controls:	All worksurfaces, the fridge and freezer were noted to be impervious to HBAs and are easily cleaned. The canteen area is well ventilated by natural means. Issues with the overhead extractor were noted.		Yes
Administrative Controls:	<u>Food Handling:</u> - A stainless-steel work bench has been provided to prepare food. - A cutting board has been provided - Meat is defrosted in a dedicated bowl to reduce the risk of cross contamination. <u>Food Storage:</u> - The freezers and fridges and the various work surfaces are cleaned regularly throughout the shift. - Frozen meat and vegetables were noted to be stored in the same freezer. <u>General and Personal Hygiene:</u> - Floors and walls were noted to be impervious and are cleaned throughout the work shift. - All surfaces are cleaned regularly throughout the work shift. - All utensils, crockery, cutlery and chopping boards are cleaned in hot water soapy water. - Hand wash facilities are provided with anti-bacterial soap, sanitiser and paper towels. - Hairnets are worn by staff.		Yes

Basic Risk Assessment Model – Risk Ranking Charts



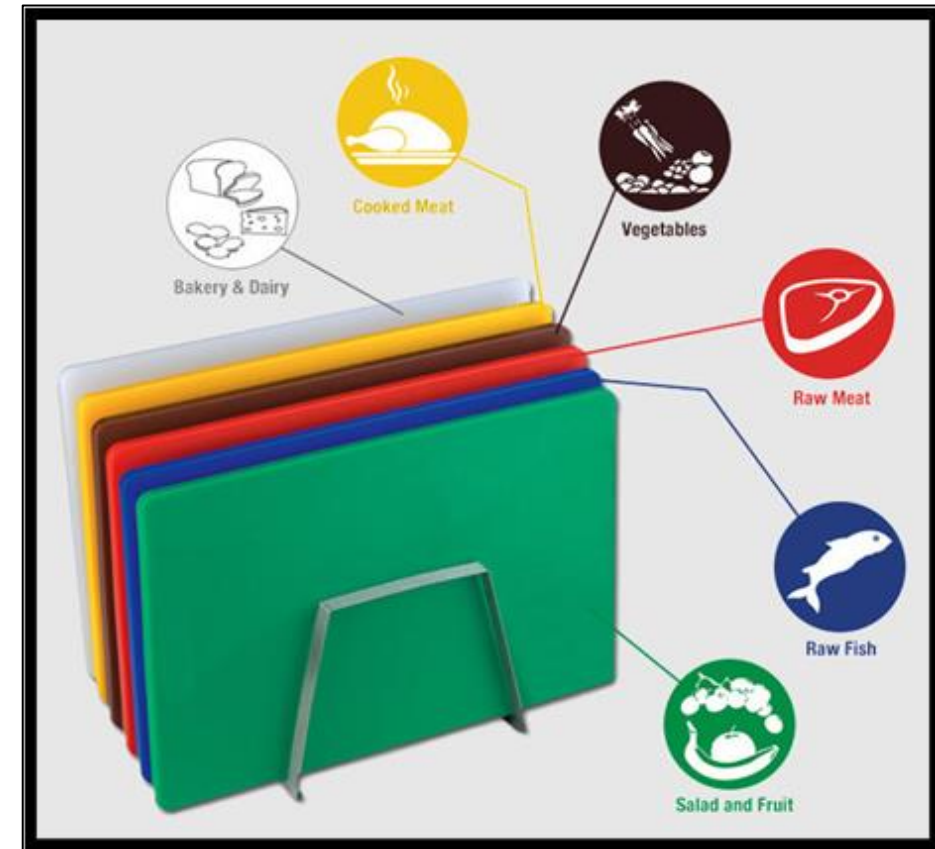
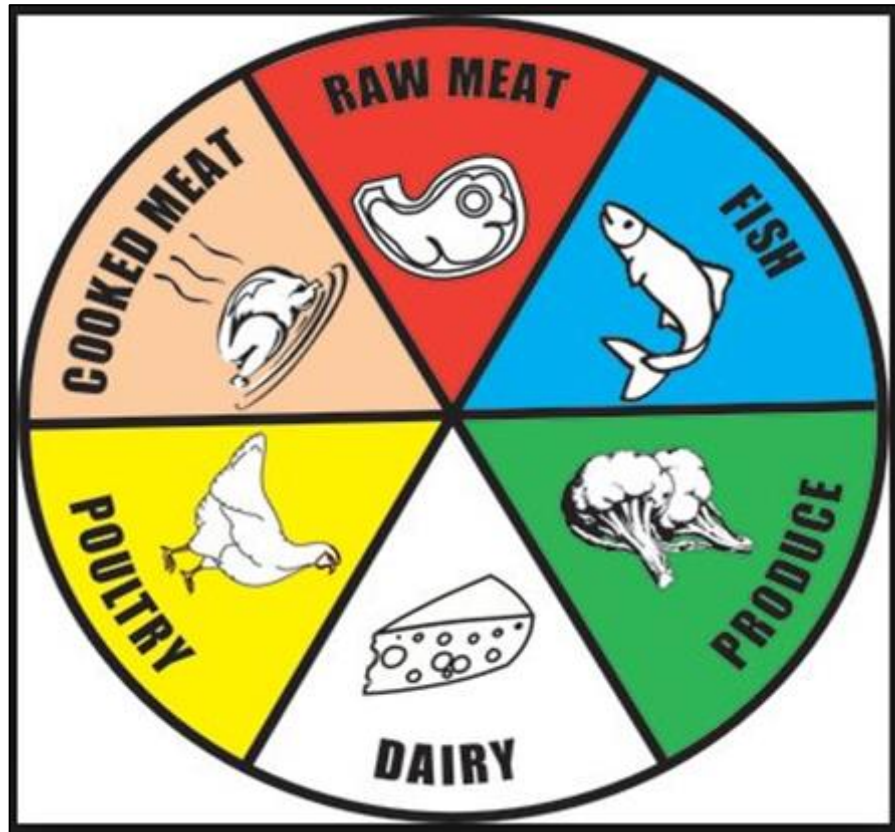
LIKELIHOOD OF EXPOSURE (PROBABILITY RATING)				
HEALTH EFFECT / HAZARD (SEVERITY RATING)	Minimal exposure	Moderate exposure	High exposure	Severe exposure
	Infrequent contact at low levels	Infrequent contact at high levels or Frequent contact at low levels	Frequent contact at high levels	Frequent contact at very high levels
HBA Group 1	1	2	4	7
HBA Group 2	3	5	8	12
HBA Group 3	6 Achievable	9	13 Existing	16 Uncontrolled
HBA Group 4	10	14	17	19
Findings		Recommendations:		
The stove extractor is old, dirty and beyond repair however the intake hood, fan and ducting <u>is</u> earmarked for imminent replacement. Cutting boards are not colour-coded and meat and chicken are prepared on the same boards, in the same area.		Implement proposed ventilation upgrades Provide colour-coded cutting boards and separate preparation areas for meat, poultry, fish and vegetables.		



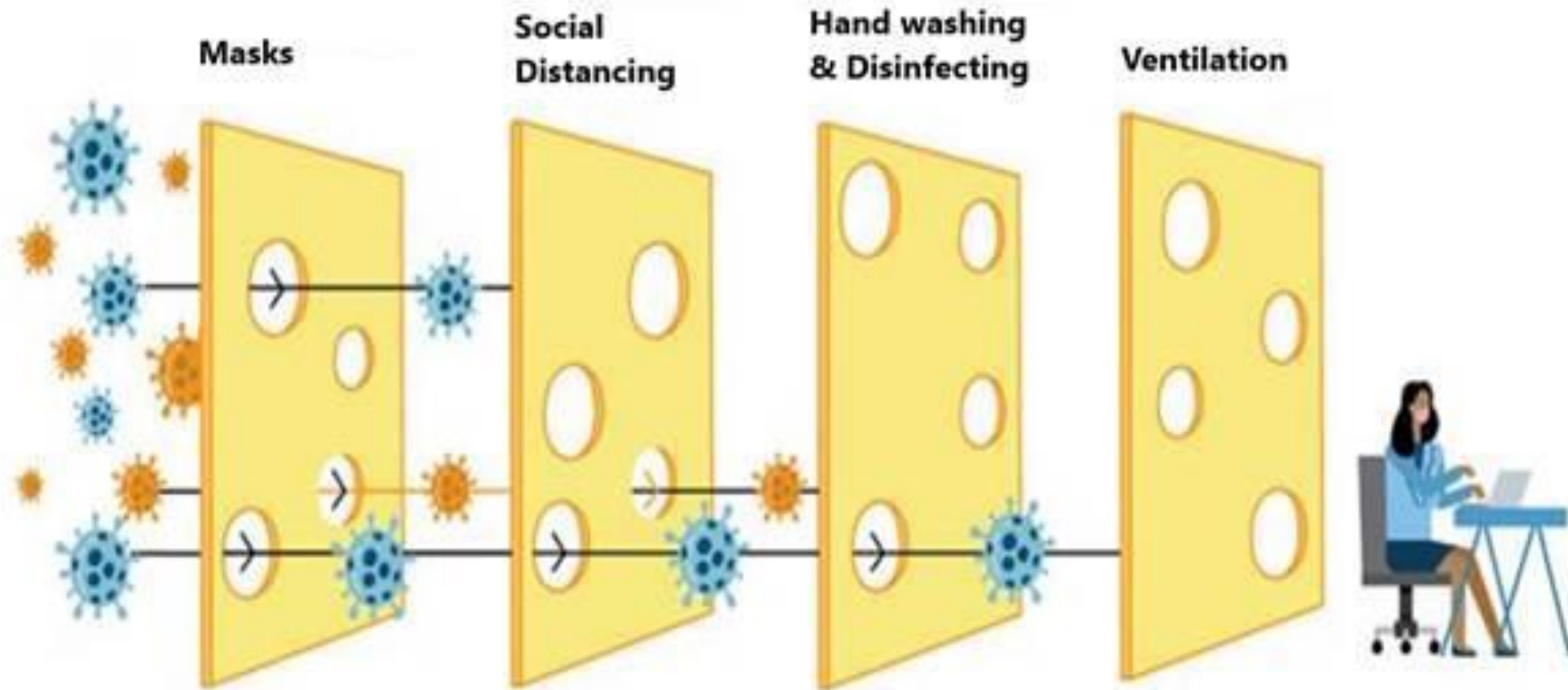
- Monitoring
- Medical surveillance
- Controlling exposure



Basic Risk Assessment Model – types of solutions



The Basket of Barriers





Sifiso Cebekhulu



SAFMA Conference: CO₂ Concentrations

Start date

End date

DAY

WEEK

MONTH

17/11/2021



17/11/2021



- Hazardous
- Bad
- Poor
- Good
- Excellent

