DEVELOPMENT OF A NEW RISK ASSESSMENT TOOL FOR EXPOSURE TO BIOLOGICAL AGENTS

Carlota Alejandre Colomo, Ph.D.

20th March 2024

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The COVID-19 pandemic reinforces the need to protect workers from exposure to biological agents.

However, there is a lack in risk assessment tools for OSH professionals.

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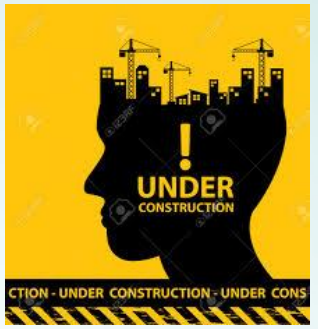

Get to know Stoffenmanager®

Stoffenmanager® is the knowledge-based platform aimed at reducing exposure risks to hazardous substances and biological agents in the workplace. We offer a sustainable and simple solution in 11 languages to help organizations worldwide meet (local) regulatory requirements and to be responsible employers by creating a safe workplace. We do this by means of consultancy, training courses and the scientifically validated tool, Stoffenmanager® version 8. Together with you, we work on a safe and healthy work environment!

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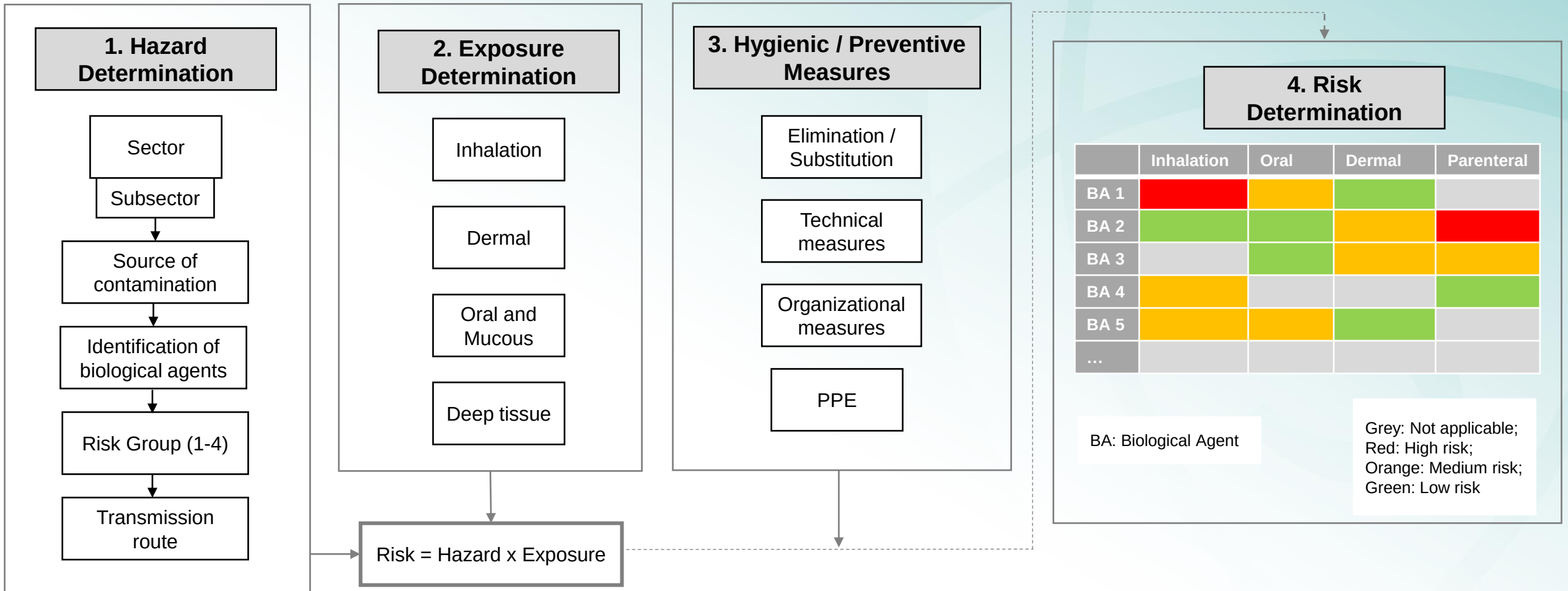
Stoffenmanager® is an online system to identify the chemical hazards, control the exposure at workplaces and communicate in an understandable, transparent manner to managers, employees and external stakeholders.

Project steps for Stoffenmanager® Biorisk

PHASES	EXPLANATION	PARTICIPANTS
Phase 1	Literature research and comparison of existing tools (Master Thesis). Functional requirements for the development of a new qualitative biological risk assessment tool. (completed)	Rudolf van der Haar (MC Mutual) Cristina Bercero (MC Mutual) Asun Galera Rodrigo (Universitat Politècnica de Catalunya) Geneviève Marchand (IRSST) Carla Viegas (IPL) Remko Houba (NKAL)
Phase 2	Control Banding Inhalation Model (completed)	Rudolf van der Haar (MC Mutual) Cristina Bercero (MC Mutual) Geneviève Marchand (IRSST) Carla Viegas (IPL) Anne Mette Madsen (NFA/NRCWE)
Phase 3	Testing of Phase 2 (ongoing)	Rudolf van der Haar (MC Mutual) Cristina Bercero (MC Mutual) Geneviève Marchand (IRSST) Carla Viegas (IPL) Anne Mette Madsen (NFA/NRCWE) Karen Galea (IOM WORLD)
Phase 4	Proposal for quantification – QMRA (to be developed)	Rudolf van der Haar (MC Mutual) Cristina Bercero (MC Mutual) Geneviève Marchand (IRSST) Carla Viegas (IPL) Anne Mette Madsen (NFA/NRCWE) Karen Galea (IOM WORLD) Lidwien Smit (IRAS/NKAL) Remko Houba (NKAL)
Phase 5	Control Banding for other routes (ongoing)	Rudolf van der Haar (MC Mutual) Cristina Bercero (MC Mutual) Geneviève Marchand (IRSST) Carla Viegas (IPL) Anne Mette Madsen (NFA/NRCWE) Karen Galea (IOM WORLD)
Phase 6	Presentation of results at national & international scientific and practically oriented OSH events, congresses (ISES, etc.) (ongoing)	

Phase 1. Literature research and comparison of existing tools



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STOFFENMANAGER® INHALATION BIOAEROSOL MODEL

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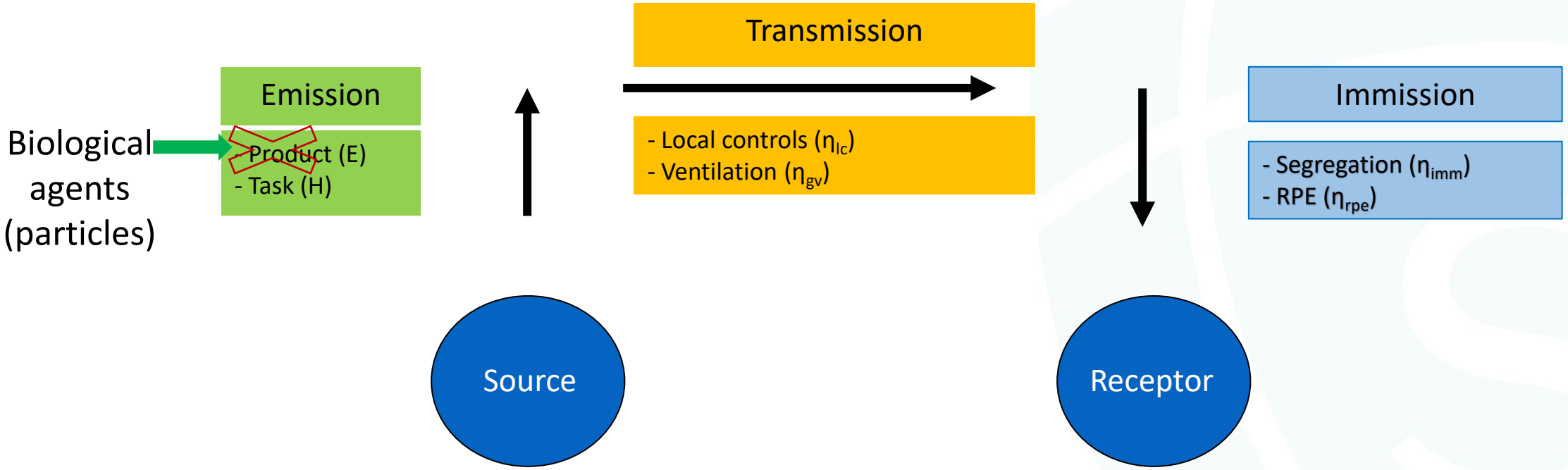
Development steps

1. Development of the conceptual model
2. Choose the model parameters
3. Assign scores to the parameters (based on literature)
4. Implement the model in the Stoffenmanager® Model Research & Validation Platform
5. Test performance of the model
6. If needed, make adjustments

Exposure control banding - INHALATION



$$B_t = [(E \cdot a) + (E \cdot H \cdot \eta_{lc} \cdot \eta_{gv\_r}$$

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Validation of a New Method for Structured Subjective Assessment of Past Concentrations

JOHN W. CHERRIE*†§ and THOMAS SCHNEIDER‡

*University of Aberdeen, Department of Environmental and Occupational Medicine, Foresterhill, Aberdeen AB25 2ZD, UK; †Institute of Occupational Medicine, 8 Roxburgh Place, Edinburgh EH8 9SU, UK; ‡National Institute of Occupational Health, Lersø Parkallé 105, DK-2100, Copenhagen 0, Denmark

Matrix

Priority levels

Score

	Risk Group 1	Risk Group 2	Risk Group 3	Risk Group 4
Score Low Exposure	III	III	II	I
Score Medium Exposure	III	II	II	I
Score High Exposure	II	II	I	I
Score Very High Exposure	II	I	I	I

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Phase 3. Testing of Inhalation Model

NL – Netherlands
CA – Canada
SP – Spain
UK – United Kingdom
PT – Portugal

SOURCE OF CONTAMINATION	SECTORS - JOBS	NUMBER OF WORKPLACE SCENARIOS	LOCATIONS
Human or animal contaminated by use	Waste disposal, wastewater	64	NL, SP
Human or animal contaminated by nature	Municipality Maintenance	4	NL
Processed materials	Food industry	7	NL, CA, SP
Materials from nature (not human nor animal contaminated)	Green waste, forestry, seeds	9	NL, UK
Pure biological agents	Laboratories	40	NL
Beings	Farms, health care, embalming	19	NL, CA, SP
Archival materials	-	-	-
Wood dust	Sawmills	7 (ongoing)	PT
Total		**147 + ongoing**	

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Workplace scenario: Embalming

Scenario: Embalming, removing intestinal material with trocar

- Source of contamination: Human
- Tasks that involve Aerosol Generating Procedures
- Amount: up to 2 beings
- Daily cleaning of working room? Yes
- Regular inspections and maintenance of machines/ancillary equipment? Yes
- Task carried out in the breathing zone of an employee (distance head-product <1m)? Yes
- More than one employee carrying out the same task simultaneously? Yes
- Duration: 45 min
- 5 days a week
- Indoors 31-100 m^3, with enhanced mechanical ventilation
- No control measures at the source
- The worker does not work in a cabin
- No protection

Atmosphere **2022**, *13*(8), 1281; https://doi.org/10.3390/atmos13081281


atmosphere

MDPI

Article

Occupational Microbial Risk among Embalmers

Loïc Wingert [1], Maximilien Debia [2], Stéphane Hallé [3] and Geneviève Marchand [1,*]

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Workplace scenario: Embalming

Mycobacterium tuberculosis (G3)
Streptococcus pneumoniae (G2)
Pseudomonas spp. (G2)
Enterobacter spp. (G2)
Staphylococcus spp. (G2)

Serratia spp. (G2)
Leclercia spp. (G2)
Hafnia spp. (G2)
Moraxella spp. (G3)

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THANK YOU FOR LISTENING

Questions?

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Van Heuven Goedhartlaan 121
1181 KK Amstelveen
The Netherlands

T: +31 20 79 20 013
E: info@stoffenmanager.com
W: www.stoffenmanager.com

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