



AIRCRAFT CABIN AIR
International Conference 2021

INTERNATIONAL AEROSPACE CONFERENCE

AIRCRAFT CABIN AIR CONFERENCE

Flight Safety and Cabin Air Quality

4 Day Conference, Online

15-18 MARCH 2021

aircraftcabinair.com



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Tristan Loraine (Conference Director)
Susan Michaelis, Dieter Scholz (Editor)

CONFERENCE PROGRAMME

2021 International Aircraft Cabin Air Conference

15-18 March 2021, Online, Zoom

London: Global Cabin Air Quality Executive (GCAQE)

2021

Conference Homepage:

<https://www.aircraftcabinair.com>

Conference Proceedings Homepage:

<https://zenodo.org/communities/aircraftcabinair>

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1 Introduction

Following on from the success of the 2017 and 2019 Aircraft Cabin Air Conferences, the 2021 conference will be an essential four-day free modular online event via Zoom. 2021 is providing an in-depth overview, update and debate for those seeking to understand the subject of contaminated air, the flight safety implications, the latest scientific and medical evidence investigating the contaminated air debate and the solutions available to airlines and aircraft operators.

This online international conference mapping the business, regulatory and technical solutions to cabin air contamination, follows on from the successful 2017 and 2019 conferences we organised in London.

2 Conference Objectives

By way of expert global independent and industry speakers, the 2021 Aircraft Cabin Air Conference will provide a unique insight into the subject matter. Through a modular format, over 4 days (1500-2000 GMT), conference participants will have the opportunity to participate via Zoom, for free, in a wide selection of presentations and talks. These will range from the basic issues of contaminated air, the history, previous research, the flight safety implications and findings, medical aspects of exposures, current research and policy making, review of ICAO, IATA, EASA, IFALPA, ITF, GCAQE and FAA positions and guidance related to the issue, the new GCARS reporting system or discover the very latest news in the development of sensors and filtration technologies to detect and filter contaminated air.

The conference will seek to achieve the following key objectives:

- Provide a historical overview of the contaminated air issue and its causes from the 1950s to present day.
- Map out the flight safety aspects of contaminated air through case studies, discussion and air accident investigation findings.
- Disseminate the latest medical and scientific theories and findings on the health aspects of exposure to contaminated air.
- Give guidance of workers compensation, legal and the regulatory aspects of cabin air quality.
- Provide regulators, airlines, occupational health, policy makers, public health officials, engine manufacturers, researchers, academia, airline workers, passengers, media and other interested parties, the opportunity to expand their knowledge and understanding of the contaminated air issue.
- Examine the latest development towards bleed air filtration, contaminated air warning sensor systems and other potential solutions.

3 Conference Speakers

Mr. Paul Roux

Sr. Principal Engineer R&D
Pall Aerospace

Dr. Rick Mlcak

Sr. Principal Engineer
Pall Aerospace

Mr. Victor Leung

Global Marketing Manager
Clean AirBASF

Mr. Dragos Munteanu

Assistant Director Safety and Flight Operations - IATA

Mr. Eoin Coates and Mr. Kris Major

European Transport Workers' Federation (ETF)

Dr. Mariano Di Matteo

Aero-Thermo-Mechanics Department, Université Libre de Bruxelles

Mr. David Conrad

Vice President, Business Development
PTI Technologies

Mr. Mike McConnell

Aero Data Science / L2 Aviation

Mr. Ricardo Pavia

Aircraft Maintenance | Systems Engineering - TAP

Mr. Jonathan Saltman

Member - Business Development
Aviation Clean Air

Professor Dr.-Ing. Dieter Scholz, MSME

Aircraft Design and Systems Group (AERO)
Hamburg University of Applied Sciences

Professor Vyvyan Howard

Professor of Pathology (toxicology)
University of Ulster

Ms. Sarah Shabbir

Institute for Aerospace Technology, The University of Nottingham

Mr. Tony Cable

Aircraft Accident Investigation Consultant (AAIB - retired)

Captain Rudy Pont

European Cockpit Association - Air Safety Committee

Ms. Gitte Furdal Damm

Human Factors Consultant

Mr. Halvor Erikstein

Industrial Hygienist

SAFE – Norwegian Union of Energy Workers

Mr. Frank Brehany

Independent Consumer Campaigner & Commentator

Ms. Judith Anderson, MSc CIH

Industrial Hygienist

Association of Flight Attendants-CWA

Mr. Daniel Dumalin, MSc.(Psy)

Research Psychologist specialised in Neurophysiology

Dr. Alvin V. Terry Jr. - PhD

Chairman, Dept of Pharmacology & Toxicology

Augusta University

Dr. Jonathan Burdon

AM, MBBS, MD, FRACP

Consultant Respiratory Physician

Dr. Paul I. Williams

Senior Research Fellow
National Centre for Atmospheric Science,
The University of Manchester,

Dr. Susan Michaelis - PhD / MSc

Michaelis Aviation Consulting

Professor Clement Furlong

Professor of Medicine and Genome Sciences,
University of Washington

Dr. Richard Fox - PhD

Aircraft Environment Solutions Inc.

Mr. Arie Adriaensen

KU Leuven University, Department of Mechanical Engineering

Professor Mohamed B Abou-Donia, Ph.D.

Duke University School of Medicine

Mrs. Gayle Fitzpatrick

Mr. Glen Lasken

Specialist worker's compensation attorney

Ms. Zoe Littlepage

Athea Trial Lawyers & Littlepage Booth Leckman

Ms. Alessandra Airaldi

GCAQE board member

Captain Nicholas McHugh

GCAQE board member

Captain Tristan Loraine BCAi

Conference Director

4 Schedule for the 2021 Aircraft Cabin Air Conference

15 - 18 March 2021, 1500 to 2000 GMT

All times are Greenwich Mean Time (GMT)

DAY ONE: Monday 15 March 2021

SESSION ONE: Introductions and the history of the issue

15:00-15:07

Conference introduction

Captain Tristan Loraine BCAi

Conference Director

15:08-15:13

Understanding filtration and 'bleed air'

Short films

15:14-15:29

Contaminated air - the perspective of a former airline-training captain

Captain Nicholas McHugh

GCAQE board member

15:30-16:00

History of Contaminated air

Captain Tristan Loraine BCAi

16:01-16:06

Comfort Break

SESSION TWO: Understanding engine seals and exposures

16:07-16:18

Aircraft Cabin Air and Engine Oil - An Engineering Update

Professor Dr.-Ing. Dieter Scholz, MSME

Aircraft Design and Systems Group (AERO)

Hamburg University of Applied Sciences

16:19-16:35

Radial Lip Seals for Aerospace Applications - an overview

Ms. Sarah Shabbir

Institute for Aerospace Technology

The University of Nottingham

16:36-16:44

Engine seals from a pilot's perspective

Captain Tristan Loraine BCAi

16:45-17:01

Study On Aircraft Bleed Air Contamination By Engine Oil:
Experimental And Numerical Investigation Of Dispersed Air-Oil Two-
Phase Flow Through The Environmental Control System

Mariano Di Matteo

Aero-Thermo-Mechanics Department, Université Libre de Bruxelles

17:02-17:22

Discussion and Q&A

17:23-17:28

Comfort Break

SESSION THREE: Global perspectives

17:29-17:33

CAQS Cabin Air Quality Sensor Product Showcase

Pall Promo Film

17:34-17:47

IATA perspective on Cabin Air Quality standards development

Mr. Dragos Munteanu

Assistant Director Safety and Flight Operations - IATA

17:48-18:09

Air Quality: The State of Standards

Mr. Frank Brehany

18:10-18:27

Operational aspects of contaminated air - an engineer's perspective

Mr. Ricardo Pavia

Aircraft Maintenance | Systems Engineering - TAP

18:28-18:38

Differing viewpoints

Short film

18:39-18:55

Cabin Air Contamination Sensors and European Regulations

Mr. Arie Adriaensen

KU Leuven University

Department of Mechanical Engineering

18:56-19:06

Flight safety and the key role of flight attendants

Ms. Alessandra Airdi

GCAQE board member

19:07-19:17

GCAQE global 'Clean Air Campaign'

GCAQE

<https://gcaqe.org/cleanair>

Short film

19:18-19:32

A breath of fresh air: ECA's view on CAQ

Captain Rudy Pont

European Cockpit Association - Air Safety Committee

19:33-19:43

ITF / ETF perspective of contaminated air

Mr. Eoin Coates and Mr. Kris Major

European Transport Workers' Federation (ETF)

19:44-19:58

Discussion and Q&A

19:59-20:00

Day 1 Closing comments

Captain Tristan Loraine BCAi,

Conference Director

DAY TWO: Tuesday 16 March 2021

SESSION FOUR: Operational aspects

15:00-15:02

Day 2 conference introduction

Captain Tristan Loraine BCAi,

Conference Director

15:03-15:09

Under reporting and GCARS

Captain Tristan Loraine BCAi

Short film

15:10-15:25

Patching up risks

Ms. Gitte Furdal Damm

Human Factors Consultant

15:26-15:46

Oil fumes, flight safety, and the NTSB

Ms. Judith Anderson, MSc CIH

Industrial Hygienist

Association of Flight Attendants-CWA

15:47-16:00

Discussion and Q&A

16:01-16:06

Comfort Break

SESSION FIVE: Air Accident Incidents and Findings

16:07-16:28

Air accident bureau incident reports - Case study review

Dr. Susan Michaelis

Michaelis Aviation Consulting

16:29-16:59

An air accident investigator's perspective

Tony Cable

Aircraft Accident Investigation Consultant (AAIB - retired)

17:00-17:13

Discussion and Q&A

17:14-17:19

Comfort Break

SESSION SIX: Air monitoring and measuring

17:20-17:27

Session 6 introduction

Captain Tristan Loraine BCAi,

Conference Director

17:28-17:33

BASF Film 1

BASF Film

17:34-17:49

DELAYED UNTIL END OF DAY 3

Air and Surface Purification System

Mr. Jonathan Saltman

Member - Business Development

Aviation Clean Air

17:50-18:05

[Ultrafine Particle Levels Measured On Board Short-haul Commercial Passenger Jet Aircraft.](#)

Michaelis et al

Short film

18:06-18:20

Considerations and Logistics for Global Ground and In-flight Trace Contaminant Testing to Aid in Fault Isolation of Odor Events

Dr. Richard Fox

Aircraft Environment Solutions Inc.

18:21-18:35

Use of Particulates as a Marker for Bleed Air Contamination

Professor Byron Jones

Professor of Mechanical Engineering, Kansas State University

18:36-18:47

[One night near Malmo and further research](#)

GCAQE

Short film

18:48-19:01

HALO, a new wireless cabin air quality system for aerospace markets, using detection, data, and alerting to create the healthiest environments possible.

Mr. Mike McConnell

L2 Aviation

19:02-19:32

Sensing Technology

Dr. Rick Mlcak

Sr. Principal Engineer

Pall Aerospace

19:33-19:59

Discussion and Q&A

19:59-20:00

Day 2 Conference closing comment

Captain Tristan Loraine BCAi,

Conference Director

DAY THREE: Wednesday 17 March 2021

SESSION SEVEN: Introduction to organophosphates

15:00-15:04

Day 3 conference introduction

Captain Tristan Loraine BCAi,

Conference Director

15:05-15:18

[Understanding organophosphates used in aviation](#)

Short film

15:19-15:34

Simultaneous inboard and outboard, inflight measurements of ultrafine particle concentrations

Dr. Paul I. Williams

Senior Research Fellow

National Centre for Atmospheric Science (NCAS),

The University of Manchester

15:35-15:50

Two sides of the same coin. Exposure to lubricants from aircraft turbine engines and offshore aeroderivative gas turbines –

Why aviation and offshore oil and gas production share the same health risk from synthetic engine oils.

Mr. Halvor Erikstein

Industrial Hygienist

SAFE – Norwegian Union of Energy Workers

15:51-16:11

Chronic low level exposure to organophosphates

Professor Alvin V. Terry Jr., Ph.D.

Regents Professor and Chair

Department of Pharmacology & Toxicology

Medical College of Georgia

Associate Vice President for Basic Science Research

Augusta University

16:12-16:29

Discussion and Q&A

16:30-16:34
Comfort Break

SESSION EIGHT: The toxicology and neurotoxicity of contaminated air

16:35-16:40
BASF Film 2
BASF Film

16:41-17:01
Toxicology of contaminated air
Professor Vyvyan Howard
Professor of Pathology (toxicology) - University of Ulster

17:02-17:21
Aircraft Cabin Air – Neurotoxicity: Update and in-depth analysis
Mr. Daniel Dumalin, M.Sc.(Psy)
Research Psychologist specialised in Neurophysiology

17:22-17:41
Autoantibodies to glial and neuronal proteins as biomarkers for neurodegeneration - Induced by Contaminated air
Professor Mohamed B Abou-Donia, Ph.D.
Duke University School of Medicine

17:42-17:54
Discussion and Q&A

17:55-17:59
Comfort Break

SESSION NINE: Occupational health and exposures

18:00-18:09

[Human Intoxication Following Inhalation Exposure to Synthetic Jet Lubricating Oil](#)

Short Film

Dr. Mark Montgomery PhD,
Toxicologist

18:10-18:21

[Crew exposure - a personal experience.](#)

Short film

18:22-18:41

Australian union perspective on contaminated air

Captain Marcus Diamond

Technical Manager, Safety

The Australian Federation of Air Pilots (AFAP)

18:42-19:02

Occupational medicine and contaminated air exposures – quarter decade later

Dr. Robert Harrison, MD, MPH

Clinical Professor of Medicine

Division of Occupational and Environmental Medicine

University of California, San Francisco

19:03-19:23

Aerotoxic Syndrome, the Heart and Organophosphates

Dr. Jonathan Burdon

Consultant Respiratory Physician

19:24-19:39

Investigating health and exposure circumstances of persons after aircraft fume events: a narrative review with medical protocol

Dr. Jonathan Burdon et al.

19:40-19:55

Discussion and Q&A

19:56-20:00

Day 3 Conference closing comments

Captain Tristan Loraine BCAi,
Conference Director

20:00-20:15

RESCHEDULED FROM DAY 2

Air and Surface Purification System

Mr. Jonathan Saltman

Member - Business Development
Aviation Clean Air

20:16-20:25

Discussion and Q&A

DAY FOUR: Thursday 18 March 2021

SESSION TEN: Safety analysis and biomarkers of exposure

15:00-15:03

Day 4 conference introduction

Captain Tristan Loraine BCAi,
Conference Director

15:04-15:24

Cabin air quality: Safety analysis and certification

Dr. Susan Michaelis

Michaelis Aviation Consulting

15:25-15:44

Have You Been Exposed to Aircraft Engine Oil? - Biomarkers of Exposure

Professor Clement Furlong

Professor of Medicine and Genome Sciences

University of Washington

15:45-15:59

Discussion and Q&A

16:00-16:05

Comfort Break

SESSION ELEVEN: The legal aspects of contaminated air exposures

16:06-16:10

Introduction of the session

Captain Tristan Loraine BCAi,

Conference Director

and

Session host

Mr. John T. Martin

Trial Lawyer

KJC Law Firm

16:11-16:18

[A passenger's perspective of contaminated air](#)
Short film

16:19-16:24

[A journey to the High Court of Australia](#)
Short film

16:25-16:59

How to Win a Claim Arising out of a Fume Event
Mr. Glen Lasken
Specialist worker's compensation attorney

17:00-17:29

Legal actions in the United States
Ms. Zoe Littlepage
Athea Trial Lawyers & Littlepage Booth Leckman

17:30-17:58

Discussion and Q&A
Hosted by
Mr. John T. Martin,
Trial Lawyer
KJC Law Firm

17:59-18:04

Comfort Break

SESSION TWELVE: Filtration solutions

18:05-18:19

Advanced Technology Filtration For A Better Crew And Passenger Experience

Mr. David Conrad

Vice President, Business Development
PTI Technologies

18:20-18:49

BASF Ozone-VOC Converters: Enhance Your Comfort

Mr. Victor Leung

Global Marketing Manager, Clean Air
BASF

18:50-19:19

Filtration Technology

Mr. Paul Roux

Sr. Principal Engineer R&D
Pall Aerospace

19:20-19:49

Discussion and Q&A

19:50-20:00

Conference closing comments

Captain Tristan Loraine BCAi,

Conference Director

CONFERENCE ENDS

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