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ASSEMBLY — 38TH SESSION

EXECUTIVE COMMITTEE

Agenda Item 17: Environmental Protection

DAMAGING EFFECTS OF EXPOSURE TO FINE PARTICLES

(Presented by the International Transport Workers' Federation (ITF))

REVISION NO. 1

EXECUTIVE SUMMARY

Persons working close to exhaust from aircraft engines and/or diesel engines (vehicles, handling and loading equipment, etc.) in airports are exposed to a complex mixture of potential health damaging air pollution. The pollution is a serious and overseen work related threat. The main concern is related to ultrafine exhaust particles from aircrafts and diesel engines. The key pollutants can be divided into four groups: Polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), inorganic gases like sulphur dioxide (SO_2) and nitrogen oxides (NOx) and particulate matter (PM). However, still not much is known about the toxicity of ultrafine particles from aircrafts. The losers in the long run are employees, employers as well as the environment. An official working group, consisting of managers from Copenhagen Airport, companies operating in the airport and unions representing employees in the airport was established, and this practice can serve as a serve as a springboard to discussion.

Action: The Assembly is invited to:

a) recognize that employee exposure to ultrafine exhaust particles from aircraft and diesel engines at airports is an urgent and overlooked work-related challenge potentially affecting the health of millions of people;
b) urge ICAO to incorporate air pollution created by diesel engines into its *Consolidated statement of continuing ICAO policies and practices related to environmental protection - General provisions, noise and local air quality*; and
c) urge ICAO to extend its policies and practices related to environmental protection into the protection of the health and safety of employees accordingly.

Strategic Objectives:	This working paper relates to Strategic Objectives C – *Environmental Protection and Sustainable Development of Air Transport*.
Financial implications:	No additional resources required.
References:	Not applicable.

1. INTRODUCTION

1.1 The International Transport Workers' Federation (ITF) is an international trade union federation of transport workers' unions. It consists of 654 independent trade union organisations representing 4.5 million transport workers in 151 countries. It is one of several Global Union Federations allied with the International Trade Union Confederation (ITUC).The ITF represents over 617 thousand civil aviation workers worldwide and speaks for Aviation employees globally. The day-to-day safe and secure operation of air transport worldwide depends on their skills and commitment.

1.2 Persons working close to exhaust from aircraft engines (main engines and the APU: Auxiliary Power Unit) and/or diesel engines (vehicles, handling and loading equipment, etc.) in airports are exposed to a complex mixture of potential health damaging air pollution. The first study documenting that these persons have an increased occurrence of DNA-damages was released five years ago. The National Board of Industrial Injuries in Denmark has now recognized several cancer cases most likely caused by air pollution in airports. The pollution is a serious and overseen work related threat. The main concern is related to ultrafine exhaust particles from aircrafts and diesel engines. Ultrafine diesel particles are known to cause cancer, heart disease, blood clots, brain haemorrhage and airway diseases (bronchitis, COPD), thereby increasing the risk of serious work related illnesses and premature deaths. However, still not much is known about the toxicity of ultrafine particles from aircrafts.

1.3 However, we do know that IARC/WHO classified diesel engine exhaust as carcinogenic to humans in 2012 (group 1).

1.4 For more than a decade, it has been well known that diesel engines used for loading and handling in airports emit high concentrations of ultrafine particles. During the recent years, several studies that had been conducted in the USA have documented high concentrations of ultrafine particles in exhaust gas from aircrafts. In spite of that, very few airports monitor ultrafine particles. The losers in the long run are employees, employers as well as the environment.

1.5 Millions of people working in airports may have been affected by potentially damaging air. Air pollution in airports originates from background pollution, from outer sources carried with the wind to the airport, and pollution produced in the airport.

1.6 In airports the main sources of air pollution are exhausted from aircrafts and diesel engines, direct fuel emissions from refueling aircrafts and larger dust particles from brakes, tires, asphalt, soil, etc. The key pollutants can be divided into four groups: Polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), inorganic gases like sulphur dioxide (SO2) and nitrogen oxides (NOx) and particulate matter (PM).

1.7 For example, in Denmark where there is legislation that covers the issue, the exposure of employees at work to air pollution is regulated according to some limit values established by the National Health and Safety at Work Act. These limit values do not necessarily adequately protect employees from dangerous air pollution and should be considered as a compromise between the health aspect and technical aspect, as well as the economic considerations.

1.8 In the EU, each year, 300-500,000 premature deaths are caused by pollution. Still no official estimates of premature death and illness due to ultrafine particles have been made. However, the European Commission has taken ultrafine particle pollution and soot particles as a key focus area and will most likely introduce a limit value before 2020.

1.9 Measurements in Danish airports to determine employee exposure were conducted in 2010-11. The measurements were performed by DCE at the Aarhus University, close to employees at work in order to find the actual employee exposure to ultrafine particles over a working day or longer working periods.

1.10 It is clear that the particle number in the airport is dominated by particles between 6-40 nm. These particles are particles with a high deposition rate in the finest parts of the lungs; the alveolar.

1.11 From the measurements in general, it is observed that employee exposure to ultrafine particles in the airport is higher than exposures during rush hour on city streets with heavy traffic in Copenhagen. The average of all exposure measurements taken at the airport is higher than the measurement taken during rush hour on city streets with heavy traffic. The average maximum half hour exposure is more than twice the maximal exposure on city streets with heavy traffic. Many baggage handlers in the airport yard inhale about 25 times more ultrafine particles than a typical office employee, with some baggage handlers inhaling up to 50 times more ultrafine particles.

1.12 An official working group consisting of managers from Copenhagen Airport, companies operating in the airport and unions representing employees in the airport was established.

1.13 The following key actions have been successfully accomplished to reduce the pollution with ultrafine particles in Copenhagen Airport by the working group:

— Investment in electrical Ground power units

— Requirements for green engines – Increased share of newer and greener engines

— Campaigns to ensure engines are turned off when possible (behaviour)

— Campaigns to ensure the APU regulations are fulfilled –five minutes after “on block” and five minutes before expected “off block”

— Environmental pushback

— One/single engine taxi

— Ongoing measurements to monitor and improve air quality

— Cohort studies of 5.000 persons employed from 1985 – until now

— An action plan with deadlines and clear division of responsibilities

2. RECOMMENDATIONS

2.1 The Assembly is invited to:

a) recognize that employee exposure to ultrafine exhaust particles from aircraft and diesel engines at airports is an urgent and overlooked work-related challenge potentially affecting the health of millions of people;

b) urge ICAO to incorporate air pollution created by diesel engines into its *Consolidated statement of continuing ICAO policies and practices related to environmental protection - General provisions, noise and local air quality*; and

c) urge ICAO to extend its policies and practices related to environmental protection into the protection of the health and safety of employees accordingly.

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