

**Results** A 28-year-old female experimental animal trainer was referred for suspected occupational asthma. She worked with rhesus monkeys for about 6 years, as a lab technician in a university neurophysiology lab, performing mainly cognitive testing. She had daily contact with the test animals. The animals were living on sawdust.

The patient experienced respiratory symptoms 2 years after she started working on the experimental lab. She had progressive wheezing and non-productive cough. The respiratory symptoms were accompanied by irritation of eye and nose mucosa, itching papules on forearms with accidental blood splashes or scratch injuries by the monkeys, spontaneously disappearing after 10 min.

Specific IgE test to rhesus monkey was not available; screening to other possible (extra-) professional exposed allergens was negative. Her total serum IgE was not elevated (55 kU/L), blood eosinophil count was elevated ( $0.3 \times 10^9$ ; 6.9%). Spirometry showed supra-normal volumes and normal exhaled nitric oxide (FENO 16.40 ppb at flow of 50 ml/sec). Histamine provocation test showed a mild bronchial hyper-reactivity ( $PC_{20}=1.47$  mg/ml). Serial peak expiratory flow recordings performed were suggestive of occupational asthma (OASYS-score=3.67).

We did not perform skin prick testing with rhesus monkey saliva, blood, urine or hairs (epithelium) because of ethical reasons (possibility of infectious contaminated material). So we decided to perform *ex vivo* testing (basophil activation test).

**Conclusion** This is the first case demonstrating the possible role of rhesus monkey exposure in the development of occupational asthma.

## 71 RESPIRATORY DISORDERS IN HOME DELIVERY SERVICE EMPLOYEES

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**Introduction** Air pollution in developing countries is causing respiratory disorders and is especially affecting health of persons who are on the road for longer period due to their occupation. Objective of this study was to find the extent of air pollution on road leading to respiratory disorders in two wheeler riders employed in home delivery service.

**Methods** Permission from concerned authorities and consent from volunteers was taken. Automobile exhaust emission was tested in 100 vehicles, 25 in each group of (above 10 years old) cars, buses, trucks and auto rickshaws. Clinical findings were recorded for 100 two wheeler riders employed in home delivery service and PFT was done for them. PFT results were compared with 100 PFT reports of employees in office work, as control. In control group only PFT reports were checked as employees were not involved.

**Results** 28% vehicles had higher than standard emission readings. PFT reports of home delivery service employees showed 24 of them had mild/moderate obstructive pathology. 36 persons had symptoms of allergic bronchitis, 31 persons had irritation in nose and throat and 18 persons had irritation in eyes. Control group showed abnormal findings in 8 PFT reports.

**Conclusion** Creating awareness and educating public about air pollution on road due to automobiles exhaust is necessary.

Implementation of strict administrative engineering controls for regular maintenance of vehicles and enforcement of rules, regulations on vehicle emission standards and fuel quality standards will make a great difference in reducing air pollution. Encouraging mass transport, pooling of cars and electric vehicles will reduce air pollution in developing countries. These measures will change the scenario to a pollution free road to produce a positive effect on health of people who are on the road for a longer time due to their occupation and also on health of the general public.

## 195 A BENCHMARK/SAFETY FACTOR APPROACH FOR SETTING OELS FOR NANOMATERIALS

Tee Guidotti. *Occupational + Environmental Health and Safety, Washington, DC, USA*

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Uncertainty over the best way to evaluate the risks of engineered nanomaterials (ENMs) is causing delay in regulation despite their rapidly growing use by industry and in consumer products. Because of their enormous diversity in size, composition, configurations and properties, it seems clear that ENMs cannot be regulated as a single class. Occupational exposure levels (OELs) for engineered nanomaterials may however be usefully set using proposed benchmark/safety factor approach. In the proposed approach, a benchmark OEL would be used for ENMs considered to be 'relatively inert' (such as TiO<sub>2</sub>). As a precaution, the recognised benchmark OEL would be based on an existing standard for fine particulate air pollution, which is highly biologically active and includes modes of particles in relevant size ranges. For ENMs which cannot be presumed to be relatively inert, additional uncertainty factors (e.g., 0.1 or 0.3) would be applied for toxicologically significant properties, such as metal or semimetal content, fibrous shape, biological activity, structure-activity relationships suggesting greater potency, and resemblance to known hazards. OELs set in this manner could be used as provisional regulatory standards until data become available to support more definitive standards. An illustration of the approach is given based on the Canada-wide ambient air quality standard for fine particulate matter (PM<sub>2.5</sub>). The Canadian standard and the proposed benchmark OEL are mass-based, of necessity. While mass may not be the most relevant dose metric for evaluating the biological effects of ENMs, mass-based measurement techniques are the only practical means for routine workplace exposure monitoring at the present time.

## 1153 EFFECTS OF SULFUR DIOXIDE ON FRACTIONAL EXHALED NITRIC OXIDE CONCENTRATION IN THE CHILD RESIDENTS OF MIYAKEJIMA ISLAND

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**Introduction** In 2000, all residents were forced to evacuate the island of Miyakejima in Japan, due to a volcanic eruption following massive amounts of volcanic gas emission including sulfur dioxide (SO<sub>2</sub>). As a high concentration of SO<sub>2</sub>