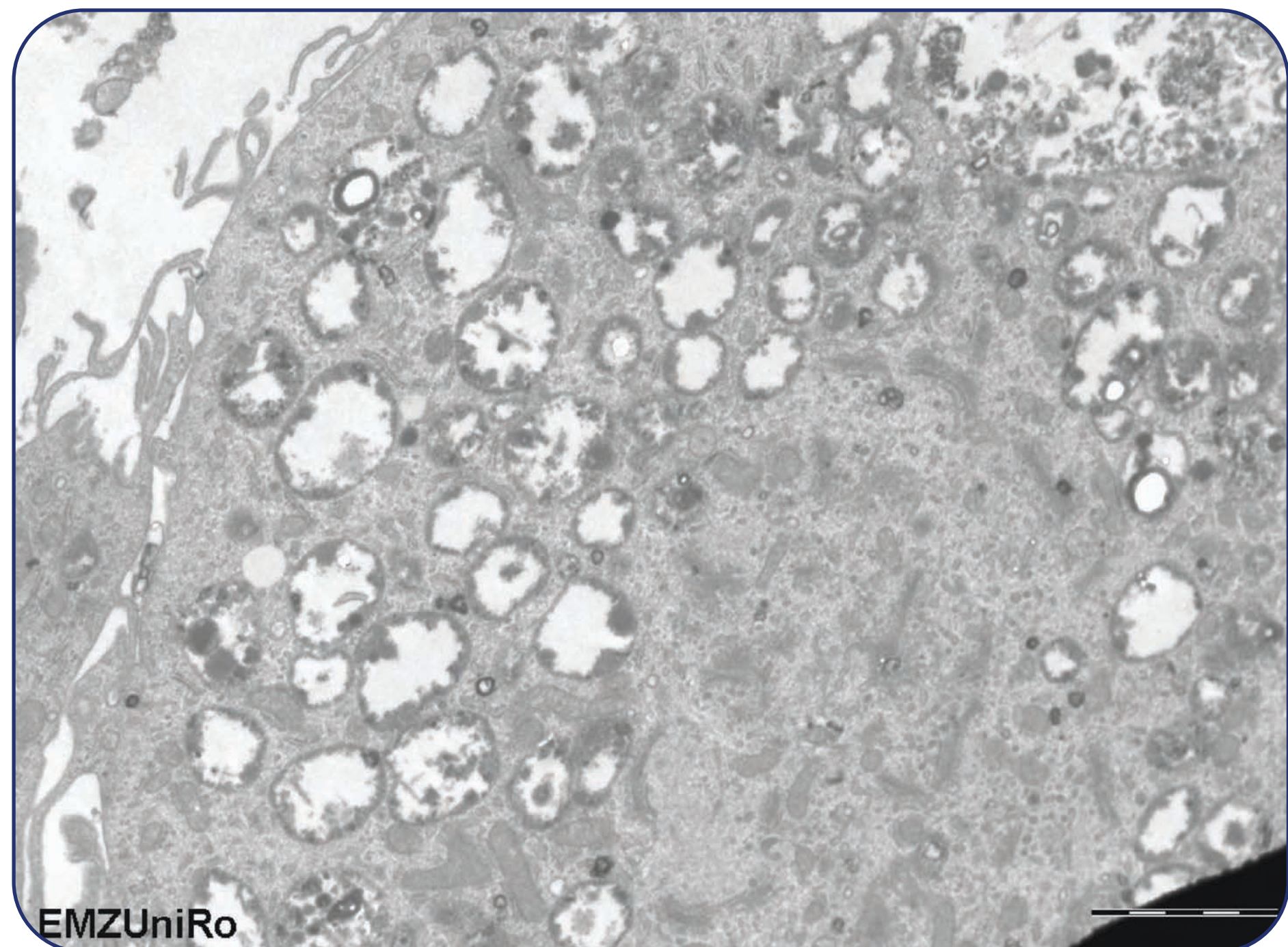
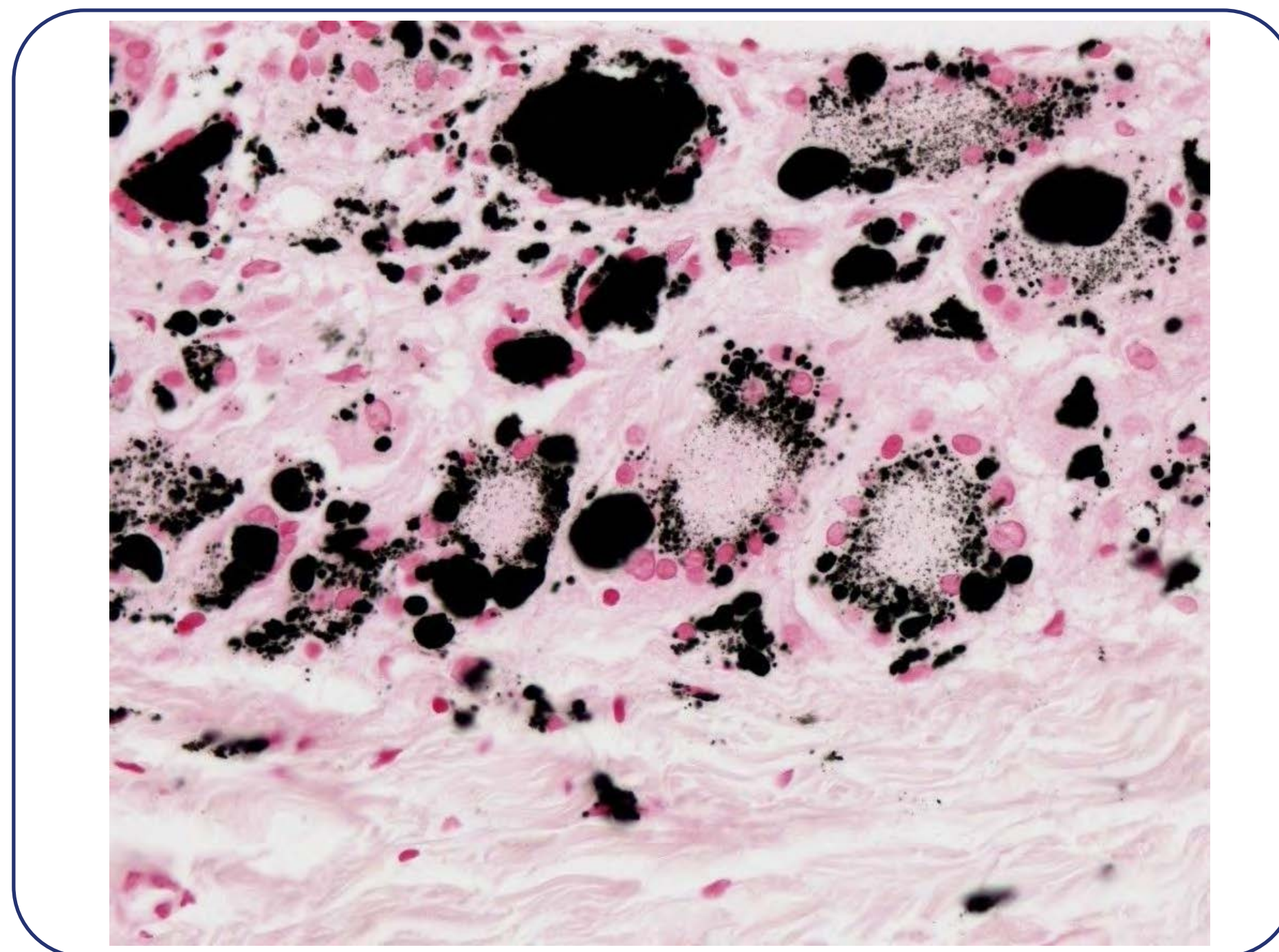


Memories of Asbestos: Health hazards due to Toner / Emissions from Laser printers and Copiers



Toner particles in human lung cells
University of Rostock



Toner in submesothelial tissue
University Essen doi: 10.1186/1746-1596-5-77

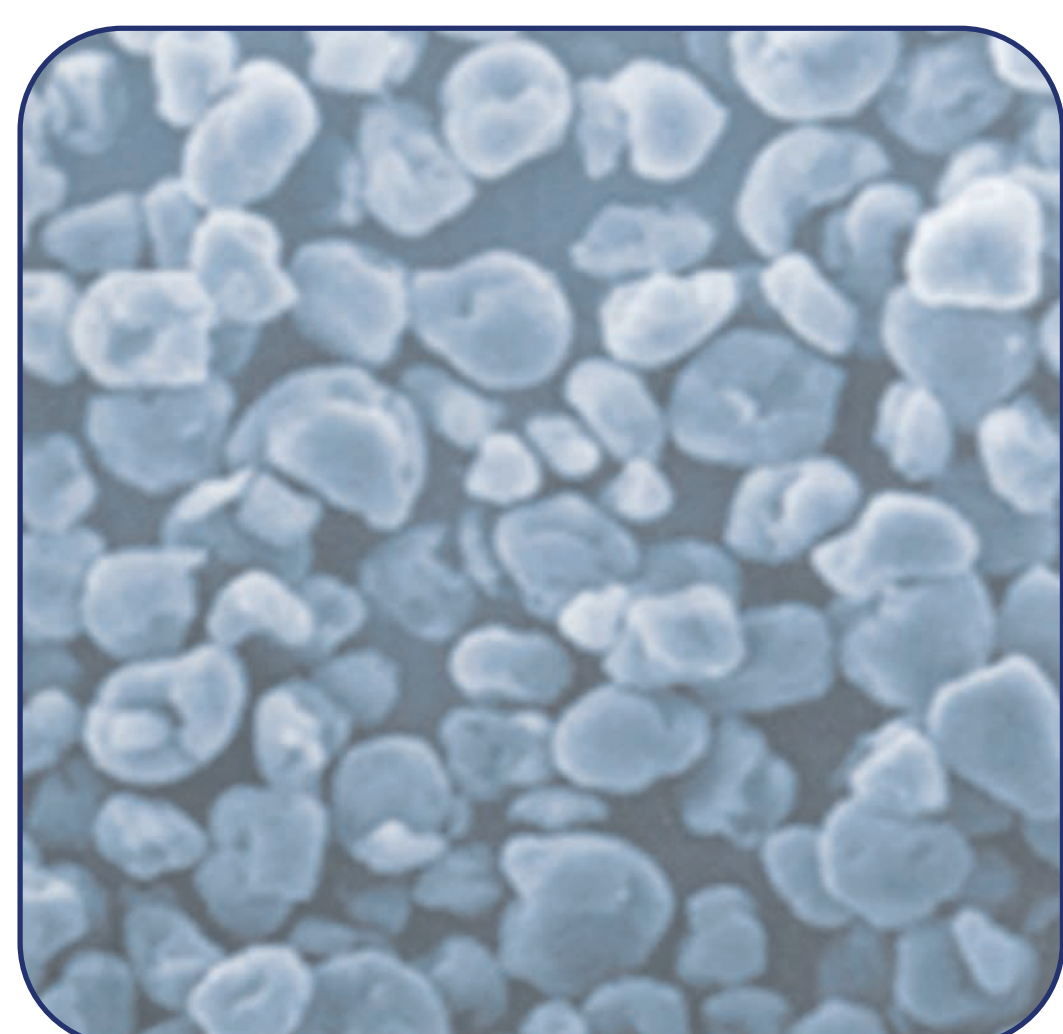
The **International nano-Control Foundation** is committed to **healthy indoor air**.

nano-Control is dedicated to raising awareness and researching. We support people who have been affected. Our mission is eliminating the risks of **indoor particulate matter pollution**, particularly caused by toxic emissions from laser printer devices.

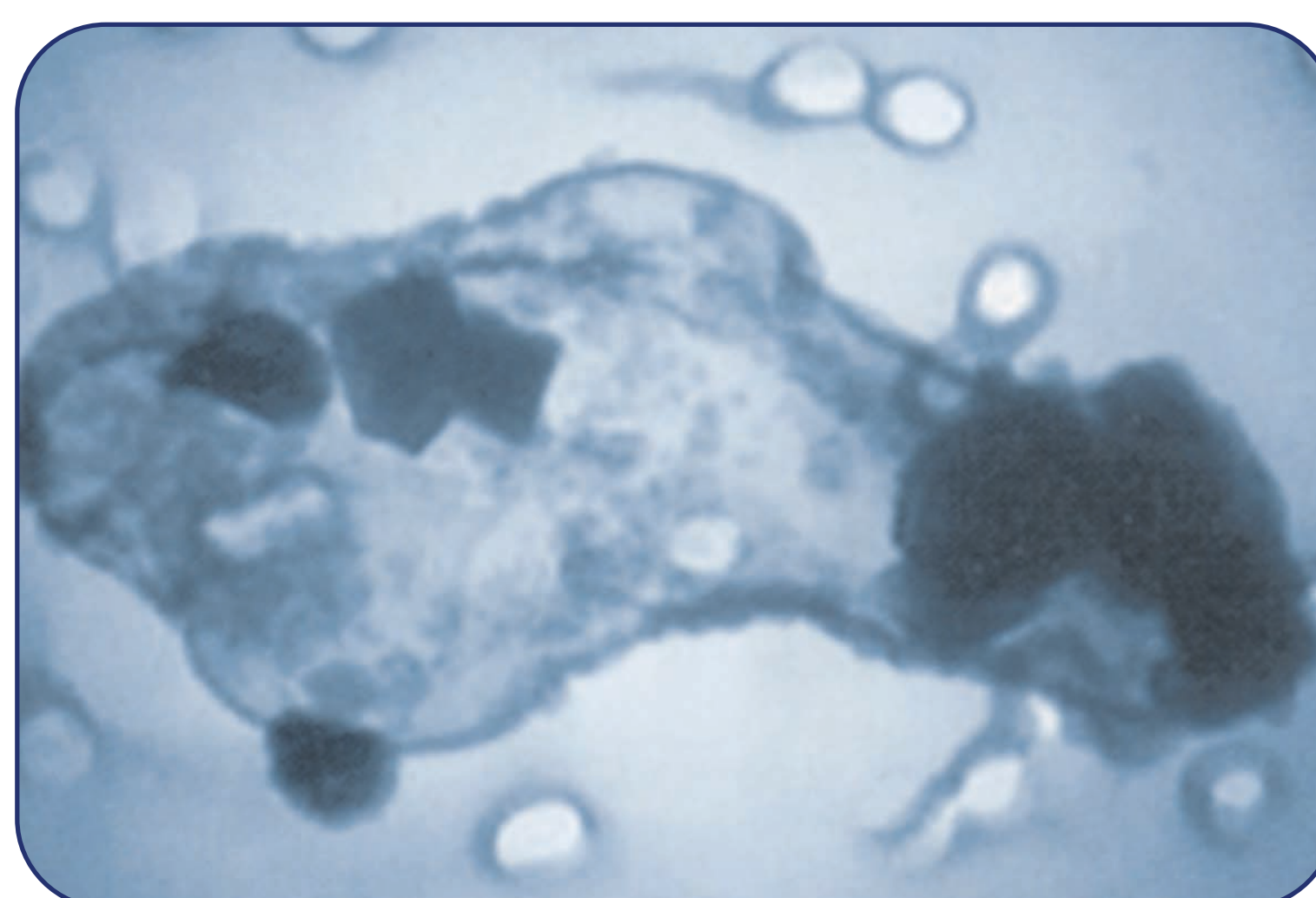
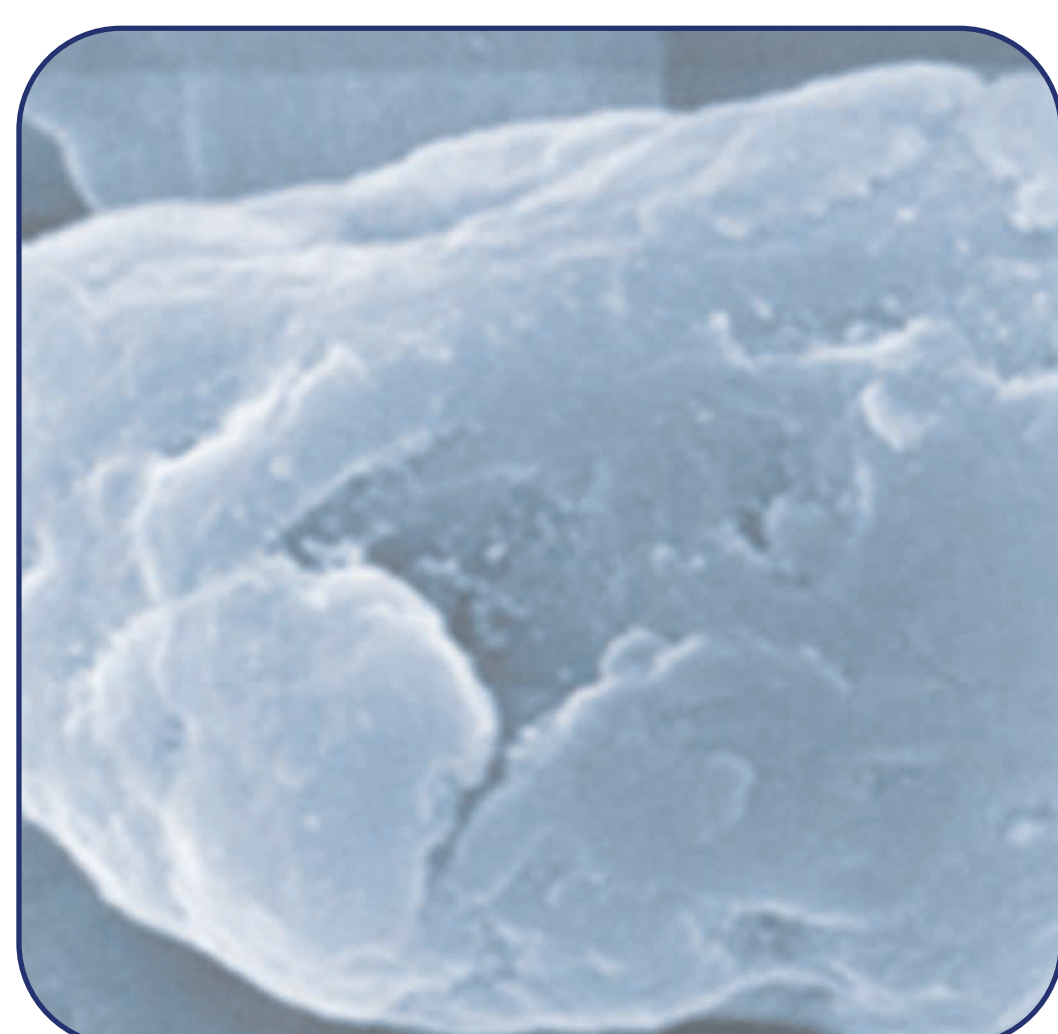
Gentoxic Effects

of Emissions on Human Lung Cells after 60 Minutes

2,4 Billion Particles per Page



Tonerparticles 1 000 / 10 000-fold enlarged.
Source IPAS, University of Giessen, 2007



*Nanobubble, consisting
of VOC, Fe, Al*

**Inflammatory and immunological effects
occur shortly after exposure**

If you frequently have following symptoms

- sneezing
- runny nose, sore throat
- irritating cough, asthma or COPD
- inflammation of the eyes, bladder or skin
- stomach ache, headache or muscle pain
- feeling extremely tired (fatigue)

and don't know why,
it's possible that emissions from laser printer, laser
fax or copier are the cause.

Do you feel better at the weekend?

The Foundation's volunteers will advise you free of
charge.

www.nano-control.org

Breathing means Living

What are the health effects of occupational exposure to printer and photocopier machines?

Analyzed 1998 de-identified records from an online survey in Germany
16 Health Outcomes and 3 Exposure Variables

Visible toner dust exposure was linked to:
• Chronic fatigue (OR=9.55)
• Cardiovascular diseases (OR=5.14)
• Allergies, asthma, gastrointestinal, neurological (OR=1.4-3.24)
Technicians had a higher risk for cancer compared to office workers (OR=2.52)

Increased health risks among workers from the survey warrant further investigation of causal associations.

Self-reported symptoms associated with the use of printer and photocopier machines: Results from the Nano-Control International Foundation survey.
Abimbola Ojo, MPH; Dhimiter Bello*, Sc.D.; Karyn Heavner, Ph.D.; Heike Krüger, Kurt Lucas, Ph.D.; Anila Bello, Sc.D.

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JOEM Journal of Occupational and Environmental Medicine



Facts

- **United Nations:** Clean Air is a Human Right
WHO Indoor air pollution: health problems in children - effects respiratory, nervous and immune system and impairment of cognitive development.
- **WHO Europe:** Premature deaths
569,000 people ambient air pollution,
154,000 deaths to household air pollution
- German researchers found **toner particles** in lung cells and in abdominal cavity
- **Call from Science to WHO for Mandatory Rules for Indoor Air** for three key indoor pollutants: carbon dioxide (CO₂), carbon monoxide (CO) and PM_{2.5}

**Ultra-fine
particles from
laser printers can
cause asthma**

- **Toner** (95% Micro-/Nanoplastic particle) and **Emission: heavy metals**, e.g. Fe, Al, As, Pb, Cd, Co, Cu, Cr, Mn, Ni, Sb, Sn, Sr, Ti, Gd, volatile organic compounds (**VOCs**) and carcinogenic polycyclic aromatic hydrocarbons (**PAHs**), **PFAS** and **DEHP**. **Ultra-pollutants** DBT and TBT also detected.
- **Ultrafine particles** cross blood-lung&brain-barrier
- Toner and Emissions can have a **gentoxic effect** on human cells after a short time. This can cause cancer. Especially **pregnant woman** should be aware.
- **Self-reported Symptoms Associated With the Use of Printer and Photocopiers**
2.000 participants (1999-2010)
respiratory diseases (90%), allergies (70 %)
Visible tone dust is a strong predictor:
chronic fatigue, bronchial hyperreactivity,
asthma/COPD and cardiovascular disease

Call for Mandatory Rules

- **Print more reliably with ink instead of toner** cost-effective alternative - also for the business sector (a must for the home office!)
- **Separate Room for Laser printer** with self-sufficient supply / exhaust air and room air cleaning!
- **Use Fine Dust Filter**
Never operate laser printer without filter. Professional filters can significantly reduce indoor air pollution!
- **Periodic Measurement UFP PM 0.1 / PFAS**
Particle number-, not mass-based
- **Maintenance only by specialists** with special hoovers and respiratory protection