

## Press information

### **BITKOM sees no reason to question the high safety level of laser printing systems due to cell research by the IUK Freiburg**

- Toners and emissions are comprehensively tested according to toxicological standards
- Laser printing systems provide for a high level of user safety under intended conditions of use
- Acknowledged risk assessments of German authorities do not indicate an elevated risk

Berlin, 17 March 2010

Original equipment manufacturers organized in the German Association for Information Technology, Telecommunications and New Media (BITKOM) ensure a high level of user safety of their current laser printing and copying systems. BITKOM does not see that results of recently presented cell tests would imply health risks when devices are operated as intended\*. In contrast to well established test chamber testing and comprehensive health relevant assessment procedures, applicability and validity of the presented *in-vitro* testing procedure have not been scientifically accepted.

In particular, it is unclear if the presented laboratory procedures (*in-vitro*) applied by the Institute of Environmental Medicine and Hospital Epidemiology at the University Hospital in Freiburg (IUK) are suitable to sufficiently simulate realistic concentrations and exposure conditions. The institute has presented first preliminary results this week, scientific publication of the study is still pending. From a scientific point of view it also remains questionable if the presented testing system is suitable to test for particle emissions in particular. Furthermore, research results from tests with cell cultures generally do not allow to draw conclusions about real life conditions e.g. in offices.

Accordingly, BITKOM points out that speculation and misleading user information on basis of still unpublished test results have to be avoided. Dr Richard Gminski from the Institute of Environmental Medicine and Hospital Epidemiology himself confirms the limited applicability of its research results and e.g. states: "From these observations,

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one cannot just conclude laser printers would, indeed, cause cancer.“<sup>(1)</sup> Indeed, the German Federal Institute for Occupational Safety and Health (BAuA) explicitly determines possible cancer risks due to laser printing systems to lie within the “acceptable range“<sup>(2)</sup> – i.e. not higher than for many other devices or daily activities.

In fact, original equipment manufacturers organized in BITKOM have always been ensuring a very high level of user safety of their laser printing and copying systems, by closely following scientifically based and comprehensive procedures:

- Test chamber measurements according to ISO 28360:2007<sup>(3)</sup> and criteria of the RAL-UZ 122<sup>(4)</sup> ensure testing simulates operating conditions as realistically as possible and exclude emissions which are not released by laser printers.
- Assessment of device emissions (e.g. particles, ozone, volatile organic compounds) according to toxicologically based guide and limit values: The contribution of emissions to indoor air concentrations lies well below relevant German, European and US occupational safety standards (AGW<sup>(5)</sup>, BOELV<sup>(6)</sup>, US OSHA<sup>(7)</sup>)
- Check for compliance with toxicologically based indoor air emission and inhalation guidelines (e.g. the TVOC guide value of the German Federal Environmental Agency (UBA))<sup>(8)</sup> as well as technically based guide values (e.g. the Blue Angel<sup>(9)</sup>)
- Special tests on fine dust emissions commissioned by BITKOM: Results show that particle numbers indoors lie well below typical numbers in outdoor air<sup>(10)</sup>
- Research on a standardized measurement method for ultrafine particles (UFPs) from laser printers and copying systems as well as on their chemical and physical properties in co-operation with the Fraunhofer Wilhelm-Klauditz Institute (WKI)
- Support of the approach of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) to define a device-specific UFP guide value for the basic criteria of the Blue Angel
- Scientific benchmarking of UFPs from laser printing systems: In a toxicological assessment, the renowned German Helmholtz-Zentrum recently stated that there are no indications for a relevant health risk.<sup>(11)</sup> In addition, research of the WKI shows

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that UFPs are not of solid consistency, but comprised of volatile (or semi-volatile) material<sup>(12)</sup> and, therefore, neither can be classified as “dust” nor as (solid) nano particles. Therefore, the typical physical properties and potentially resulting health risks which are frequently associated with many solid particles at the nanoscale can be ruled out.

- Assessment of toner preparations according to EU Directive 1999/45/EG (as amended): Toner preparations are not classified as dangerous and do not have to be labeled e.g. as toxic, carcinogenic, mutagenic or toxic to reproduction. Furthermore, numerous studies do not provide conclusive indications for toxic effects, either.<sup>(13)</sup> In addition, toners mainly consist of thermoplastic synthetics which are stable in tissue and, thus, can be considered to be not bio-available.
- Alignment with acknowledged risk assessments: According to relevant risk assessments – e.g. by the German federal Institute of Risk assessment (BfR)<sup>(14)</sup>, the German Federal Institute for Occupational Safety and Health (BAuA)<sup>(2)</sup> as well as German Professional Associations and their institutes (VBG, BGfA, IFA)<sup>(15)</sup> – BITKOM does not see a conclusive scientific basis which would allow to expect health risks specific to toners or device emissions under intended conditions of use.

Therefore, users can essentially assume that no health risks specific to laser printing and copying systems are to be expected under intended conditions of operation. In principle, BITKOM recommends considering the instructions on e.g. correct positioning and maintenance prior to the initial start-up of a device – as given in the respective user manuals.

\* “Intended use” comprises: following the instructions in manuals, material safety data sheets and further documentation provided by the manufacturer. Relevant aspects include: instructions for positioning of the devices (e.g. room volume, ventilation rate), for maintenance (e.g. maintenance intervals), for maximum print volumes, for toners and other consumables as prescribed by the manufacturer.

### References from science and practice:

<sup>(1)</sup> Sueddeutsche Zeitung, 2<sup>nd</sup> March 2010, page 18. <sup>(2)</sup> Bundesanstalt fuer Arbeitsschutz und Arbeitsmedizin (BAuA) [German Federal Institute for Occupational Safety and Health], Tonerstaube am Arbeitsplatz [Toner dusts at workplaces], December 2008. <sup>(3)</sup> ISO/IEC 28360:2007 is a standard measurement procedure for determining chemical emissions from information and communication technology and consumer electronics equipment, among other things volatile organic compounds, ozone and particles. <sup>(4)</sup> Blue Angel measurement requirements according to RAL-UZ 122 of the German Federal Environmental Agency. <sup>(5)</sup> The revised German Ordinance of Hazardous Substances (GefStoffV) defines the workplace limits (AGW). AGWs are stated in the Technical Rules for Hazardous Substances established by the German Committee on Hazardous Substances (see TRGS 900, 2006, as amended). <sup>(6)</sup> European Commission, indicative occupational exposure limit values and binding occupational exposure limits (IOELVs/BOELVs), 2006. <sup>(7)</sup> U.S. Occupational Safety and Health Administration (OSHA), permissible exposure limits (PELs-TWA), 29 CFR 1910.1000 Z-1/Z-2, 2006. <sup>(8)</sup> Deutsches Umweltbundesamt [German Federal Environmental Agency], Richtwerte für die Innenraumluft [Guide values for indoor air], Seifert, 1999. <sup>(9)</sup> The revised Blue Angel criteria for printers, copiers, multifunction devices (RAL-UZ 122) are in effect as of 2007. <sup>(10)</sup> Examples for particles in the size of 0,3-20 µm in: Physical and chemical characterization of ultra-fine particles (UFP) released from laser printers, Wensing et al., WaBoLu-Innenraumtage, May 2009, slides 25/26. <sup>(11)</sup> Haenninen et al., Journal of Nanoparticle Research, 1/2010. <sup>(12)</sup> Ultra-fine particles (UFP) from laser printers: chemical and physical characterization, Healthy Buildings 2009, Wensing et al., 2009. <sup>(13)</sup> Umweltmedizin in Forschung und Praxis 5, Gminski, Mersch-Sundermann, 2006. <sup>(14)</sup> German Federal Institute for Risk Assessment (BfR), Health Assessment No. 14/2008, 31 March 2008, and press release 07/2008, 18 April 2008. <sup>(15)</sup> Berufsgenossenschaftliches Institut fuer Arbeitsmedizin (BGfA) [Research Institute of Occupational Medicine], Toner am Arbeitsplatz [Toner at workplaces], December 2008; Berufsgenossenschaftliches Institut für Arbeitsschutz (BGIa)/Verwaltungs-Berufsgenossenschaft (VBG), [German BG Institute for Occupational Safety and Health] Laserdrucker sicher betreiben [Safe operation of laser printers], in: Schriftenreihe Prävention SP 2.3 (BGI 820), 2006.

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The German Association for Information Technology, Telecommunications and New Media e.V. represents more than 1,200 companies, 900 of which are members. Members generate revenues of 135 billion Euros with more than 700,000 employees. These include providers of software, IT services, telecommunications, manufacturers of hardware and consumer electronics as well as companies of the digital media. BITKOM is especially committed to improved administrative regulations and framework, a modernized education system and an innovative-oriented economic policy.