Revised, Updated, Completed: The New SBM-2015

Questions about the Standard of Building Biology Testing Methods and the Building Biology Evaluation Guidelines

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How did it start? How did the Standard of Building Biology Testing Methods evolve?

More than 30 years ago, we from Baubiologie Maes began analyzing and structuring the many aspects pertaining to the Building Biology Testing Methods. Over the next years, based on our testing experience, we developed the first Standard by request of the Institut für Baubiologie IBN. Soon the Building Biology Evaluation Guidelines for Sleeping Areas followed. Both the Standard and the Evaluation Guidelines were first published in 1992. The most current version is called SBM-2015, which is the 8th edition and was presented at the IBN Conference at Rosenheim/Germany in May 2015. Since 1999, the Building Biology Standard, the Evaluation Guidelines and the accompanying Testing Conditions, Instructions and Additions have been codeveloped by a committee of experienced building biology professionals with additional help from other colleagues. Scientists from physics, chemistry, biology and architecture as well as medical doctors, laboratories and other experts have also made complementary contributions.

Who is using the Standard today?

Today the Standard of Building Biology Testing Methods is used as a guide for professional and independent testing of homes worldwide, including Europe, the US, Canada, Australia or New Zealand. Building biology consultants, associations, institutes, laboratories and manufacturers of testing equipment base their recommendations on it. Medical doctors, clinical ecologists, consumer associations and citizen groups are grateful for its guidance. Politicians, authorities, industry, insurance companies, courts... take note of it as an addition and also as a sometimes provocative alternative to established science. The Standard with its Evaluation Guidelines and Testing Conditions forms the basis of the work of the Verband Baubiologie (VB), which has been established in 2002. The Standard is also the basis for many continuing education courses and expert seminars as well as publications and books.

What makes the Standard so unique?

The Building Biology Standard with its three major categories A, B and C and a total of 19 subcategories offers a holistic approach. This is its unrivaled uniqueness and strength. The first of its kind and still unparalleled, the Standard covers all physical, chemical, microbiological and indoor air quality risk factors that originate from both the inside and the outside of a building, ranging from electrosmog, magnetic fields, radioactivity, geological disturbances, noise and light to indoor toxins and indoor climate, including particulates, mold, yeasts, bacteria and allergens. Nothing is overlooked. Still the world's first and so far unparalleled in their scope, the Evaluation Guidelines that accompany the Standard focus on the sensitive and essential sleep phase and resting period, which is associated with chronic stress.

What goals or philosophy does the Standard pursue?

It is our goal to identify, localize and assess sources of potential exposures through a holistic check of all subcategories of the Standard of Building Biology Testing Methods as well as a smart combination of the numerous diagnostic tools in order to help create indoor living environments that are as exposure-free, low-risk and natural as possible. Building biology surveys are conducted directly on site, for example, in bedrooms, living spaces, at workplaces or on properties; we use science-based testing equipment or laboratory analysis to document and assess. For any elevated readings, respective remediation recommen-

dations are developed. The professional identification and minimization of such risk factors within an individual's framework of achievability; this is what Building Biology Testing Methods are all about.

The Building Biology Evaluation Guidelines offer an optimal preventive health care and this - as mentioned above - for the especially crucial and vulnerable long-term exposure period at night when regeneration is meant to occur. The Evaluation Guidelines, like the entire Standard, follow that which is achievable and are the result of thousands of documented real-life surveys and patients' own accounts. Our guiding principle: Reduce risks whenever and wherever possible; you cannot go wrong with that.

What is the purpose of the Evaluation Guidelines?

First of all, they are meant to provide proper preventive health care. This applies especially to persons who are in need of protection such as children, the elderly, sensitive persons, chronically ill persons, those with impaired immunity, cancer patients, etc. The Evaluation Guidelines, of course, are also meant for healthy people who wish to keep their personal exposure to environmental risk factors as low as possible.

How were the Evaluation Guidelines developed and what are they based on?

First of all - as indicated above - they are based on experience. We observed how people, very often ill people, respond when stress factors they have been regularly exposed to, especially in sleeping areas, for a long time, sometimes even years, are removed, remediated. Frequently, the surprise was huge because with the removal or drastic reduction of electromagnetic pollution, indoor toxins or mold, people started to heal or got at least better.

This would inspire us to pay further attention and to experiment. The moment we had gathered a large number of conclusive and unambiguous case histories, we dared suggest the first Building Biology Evaluation Guidelines. By the way, children are ideal cases not only because they are in need of protection, but also because they show a low tendency towards placebo effects and therefore are great indicators.

In consultation with medical doctors and colleagues, the Evaluation Guidelines are continually adjusted to new emerging knowledge. We are in constant communication with each other. Many of the recommended Guideline Values remained the same over all the years, they have proven themselves, and some were corrected. If sufficient experience in the building biology community is missing, e.g. asbestos, we adopt other useful recommendations and scientific studies. Even with all the Guideline Values, we focus on feasible reductions and, if there is the slightest shred of doubt, we consider nature the ultimate guide.

Is it scientifically comprehensible?

From an empirical scientific point of view: yes. From a strictly orthodox scientific point of view: less so. The orthodox scientific method often uses a different approach lacking in practical relevance: Healthy people are subjected to mostly short-term exposures, and their reactions are observed under laboratory conditions. Real life is not laboratory, short-term is not long-term, wake period is not sleep phase, adults are not children, ill persons are not healthy persons, etc.

It is quite marvelous what we are doing: We minimize long-term exposures and then pay attention to what happens in real life, in the living environment, especially sleeping areas, where people actually live, under practical conditions.

Why are Building Biology Guideline Values so low?

Low is relative. What is used as a benchmark? Counterquestion: Why do official authorities suggest such high exposure limits? Only in comparison with these astronomically and

irresponsibly high official and legally binding exposure limits do our Building Biology recommendations appear sometimes - especially for electromagnetic fields - to be so low, but in actual fact they are not, at least not exaggeratingly so. Building Biology Guideline Values are not low at all costs. The Guideline Values we demand have been confirmed scientifically several times and, furthermore, can be realized in 95 % of all cases.

Examples?

Let's have a closer look at ELF magnetic fields of electric currents: the official, legally binding exposure limit is 100 000 nT. With regard to health problems, the globally recognized TCO Standard for low-emission computer monitors demands 200 nT at a workplace, international studies warn of problems with Alzheimer's over brain tumors to cancer from 200 nT. And after reviewing numerous international scientific studies, the WHO declares 300 to 400 nT as a "possible cancer risk to humans." In this context, building biology recommendations are certainly reasonable, at least from a preventive health care point of view: 20 nT is considered inconspicuous, up to 100 nT as a slight anomaly, up to 500 nT as a severe and anything above that as an extreme anomaly. There are lots of scientific findings and WHO recommendations, but the official, legally binding exposure limit stays the same: 100 000 nT (1000 mG). This is what I mean by irresponsible: High-quality orthodox science tells us that 300 nT represents a cancer risk and 100 000 nT are allowed, 333 times more. Unbelievable.

Let's have a closer look at ELF electric fields whose voltage surrounds us everywhere. The legislators expect the public to tolerate up to 5000 volts per meter, which is more than is found underneath a high-voltage transmission line. Studies show that long-term exposures of only 10 V/m increase the risk for childhood leukemia, cancer and other health problems. The low-emission computer monitor standard demands 10 V/m. This threshold level, which should not be exceeded at computer workplaces, can be found in every third bed, also in children's beds, and even much higher exposure levels, and not only there. Building biology recommends 1 V/m and considers up to 5 V/m as a slight anomaly, up to 50 V/m as a severe and anything above that as an extreme anomaly, which is prudent.

What happens during radio-frequency radiation (RF) exposure? Caused by vast numbers of cell antennas surrounding us, cell phones, smartphones, cordless phones, Wi-Fi…? 10 million microwatts per square meter are allowed, again, unbelievable. Many times over, it was scientifically demonstrated that at a fraction of this RF radiation level the blood-brain barrier opens, EEG patterns change, tumors increase, cellular defects occur, nerves are damaged, blood cells clump together, the immune system goes out of whack, etc. During long-term exposures, people start reacting with subjective symptoms, a myriad of diffuse health problems, feelings of discomfort, dizziness, a lack of concentration, buzzing in one's ears, sleeplessness, etc. - and that at a fraction of this fraction of RF radiation. Since the scientific assessment, which forms the basis for exposure limits, limits itself to thermal effects when actual heat is generated and so far no other effect mechanism is known or acknowledged by everyone, they jump to the conclusion: If there is no heating of the body, there is no risk. Building biology does not play along this wavelength; after all, humans are not sausages in a microwave oven! Building biology recommendations intend to protect from non-thermal effects, from sleep problems and headaches over nerve irritations and tinnitus to immune system and cell damages and that is not mentioning quality of life. During sleep, 0.1 $\mu W/m^2$ is considered inconspicuous, up to 10 $\mu W/m^2$ as a slight anomaly, up to 1000 $\mu W/m^2$ as a severe anomaly and anything above that as an extreme anomaly.

We are not alone with this and other building biology demands; many scientists, medical doctors, initiatives, experts, appeals, associations… confirm our demands with their own.

The Building Biology Guideline Values are not legally binding

Right, they are not. They are recommendations.

In some cases, however, they tipped the scales of legal decisions; law enforcement officials

could not have cared less about laws and voted for real precaution based on building biology standards. For example, judges at Freiburg recognized that "regulations and exposure limits are not sufficient to evaluate health effects" and called on the Building Biology Guideline Values for their sentence.

Medical associations and assurance companies also use our Guideline Values as a basis for their assessments. In March 2012, the Austrian Medical Association in cooperation with the Austrian Federal Chamber of Labor and the Austrian Workers' Compensation Board (AUVA) published a paper on electromagnetic fields in which the Guideline Values of the current Standard of Building Biology Testing Methods were considered to be "a suitable basis for the assessment of regular exposures of more than four hours per day". This makes judges sit up and take notice.

What about the new wireless communication technologies?

By now, there is an unimaginable number of different wireless technologies and modulation types, hundreds. And all the time, new ones are added, of course, without doing any fundamental research. Due to the amazing speed with which the new developments are introduced, there is not enough time for sufficient experience to accumulate, which is why a precautionary approach should be chosen. Another reason for the motto: as little as possible!

Twenty years ago, mobile telephone systems went digital, a completely new technology. Most digital technologies transmit wireless signals with pulsed, chopped microwaves or at least contain pulsed content. And it is this particular characteristic of the electromagnetic field - the periodic pulsing - that has a major impact on biological processes besides the field strength. Especially theses stroboscopic-like pulsed or periodic signals (GSM technologies, DECT, Wi-Fi…) still need our special attention and criticism. About 10 years ago, completely new technologies emerged that are very broadband, e.g. UMTS, TETRA or LTE - again without doing any fundamental research of biological risks. Within the broadband signal, tens, hundreds, even thousands of individual signals and information are hidden, which are all transmitted at the same time. Frequently, these types of modulation also contain periodic and chopped structures.

We are living receiving antennas; we must process, compensate and tolerate all this radiation. Humans as experimental guinea pigs. Not only humans, also animals, plants, forests, the weather, the entire climate... all are affected.

Effects, interactions?

What do we know about individual effects? Rather little. And about the interactions between various factors? Even less. This is true not just for radio-frequency radiation but for all other subcategories of the Standard as well. In mathematics, one plus one equals two. In biology, it can equal 10, 20 or 50. Mobile phone radiation plus DECT plus Wi-Fi plus wood preservatives plus flickering compact fluorescent lamps plus mold plus amalgam fillings plus fast food amount to a sum of incalculable problems.

Building biology stands for special protection?

As long as political, official, scientific and industrial standards for the assessment of biological effects caused by wireless radiation exposure consider banal thermal effects only, as long as exposure limits for ELF magnetic fields remain at 100 000 nT, even though the WHO at its highest level has recognized 300 to 400 nT as a cancer risk, as long as we continue using cell phones and cordless phones so carelessly, even though the WHO has already declared this type of radiation a cancer risk, as long as Wi-Fi is only banned in French day care centers and not in all countries, as long as pesticides are still allowed in children's rooms, as long as we have no legally binding criteria for mold and bacterial exposures, as long as asbestos is still mined and installed even though it already cost millions of lives, as long as new inventions, e.g. wireless technologies, chemicals and nanotechnology,

are let loose upon an uninformed humanity and an overwhelmed nature without any fundamental research, it is essential that we watch out, that we have Building Biology Evaluation Guidelines for the real protection of human health.

If you want real protection, you can forget about scientific standards and official exposure limits. After 30 years of development, building biology offers with its Evaluation Guidelines honest and reasonable guidance for human protection from often completely unnecessary risks, for preventive health care, probably the most honest recommendations that can be found in this world of exposure limits.

Science?

Science is a yes when it serves humanity, nature, life. Science is a no when only biased interests are served, and this happens frequently: industrial, political, financial interests, when economic growth is more important than public health.

Is building biology science?

Building biology is science because it creates knowledge, practical to apply, practical to use knowledge, because building biology pursues research, finds facts, informs, and uncovers the truth. Building Biology Testing Methods are objective, transparent, reproducible, science-based. Knowledge forms the basis for change, improvement.

Frequently, building biology ideas and pioneering projects have paved the way for necessary and long overdue scientific research. Frequently, building biology creativity and courage to bring up painful subjects have led to more sensible and compatible industrial products that protect humans and the environment.

All activities within the framework of Building Biology Testing Methods are based on human needs and the nature, not the industry, not politics, not exposure limits or regulations, not the public health office, not research that got lost in too much theory and tangled in dubious ties. We building biology professionals are independent and do not care about science when science looses sight of humans and nature, when incalculable risks are generously accepted, when it turns into a wish foundation for an insatiable industry.

Building biology is an essential addition to science, blazing a trail for research. Building biology blows life, especially with practical relevance, into orthodox science.

Sometimes gathering proof takes its time, for building biology it feels more urgent …

Building biology takes action, helps contain damage and that at the first serious signs and before final conclusive scientific evidence is provided, which can take a long, too long time until it is too late. In the case of asbestos, it took 100 years from the knowledge about a cancer risk until the first acceptable exposure limits were issued and finally it was banned. In the case of radioactivity, PCB, PCP, DDT and other harmful environmental factors, it also took years, too many years with many, too many people suffering. Building biology is a necessary addition, a pioneering research. Building biology introduces true practice, real life to orthodox science.

Building biology reduces risks and does not keep problems under wraps, but brings up the painful subjects and offers healing, in a pragmatic, holistic, responsible and independent fashion.

Arch. Winfried Schneider, chief editor of Wohnung+Gesundheit, asked the questions in June 2015.

Translated from German into English by Katharina Gustavs, Canada.