Holistic - precautionary - independent - feasible - practical - easy to understand - human - scientific - in cooperation with health professionals - based on experience - measured by nature

How did this Standard come about? How did it evolve? What significance does it have today?

BUILDING BIOLOGY STANDARD - Its Story and History

By Wolfgang Maes, Building Biology Professional / Journalist DJV

Following repeated requests, written for Building Biology colleagues and all those who are interested in that exciting topic of Home and Health

Especially for those who are younger and new to Building Biology and did not witness the early beginnings of the Standard and its development over the course of 30 years

Also for those who were there in the beginning and are more experienced in Building Biology and interested in refreshing their memory

As well as for those who would like to know what the current Standard is about today and how it will continue in the future

And as a contribution to the VB-Forum "Shaping Future Together" of the German Building Biology Association VB in November 2016 and September 2017 in Fulda/Germany

It began with Professor Schneider...

It all began with Prof. Dr. Anton Schneider - then head of the Institut für Baubiologie+ Ökologie IBN (Institute of Building Biology+Ecology IBN) in Neubeuern/Bavaria - this pioneer, engine and measure of the emerging Building Biology movement in the 1960s to 1970s. He was deeply dedicated to healthy building and living, the interrelationships between humans, nature and architecture. He was the initiator and head of the Fernlehrgang Baubiologie (Building Biology Correspondence Course), which has been completed by more than 7000 participants worldwide by now. He was the author of several books and brochures in his series Gesünder Wohnen (Healthy Living) and the editor of the IBN Building and Living Magazine Wohnung+Gesundheit (Home+Health), his favorite child. He gave lectures and wrote for specialist media. He was the first and only scientist to teach the subject of Building Biology, namely at the Fachhochschule für angewandte Wissenschaften (University of Applied Sciences) in Rosenheim, Bavaria.

I got to know Prof. Schneider for the first time in March 1988 at an event in Stadtsteinach, Franconia. He spoke to me because he knew that I had already done a series of Building Biology assessments and experiments in homes, bedrooms and other places. He wanted me to conduct a first seminar called "Home Investigation", talking and teaching about my previous testing experience and case studies - a premiere. At that time, there were only a few specialists in Germany who were carrying out this kind of surveys, but none in other countries. Immediately, I made his wish come true and this very first one-day seminar had 27 participants. A second two-day seminar followed shortly thereafter with 40 participants and a third one with over 50 participants. Time seemed to be ripe.

Shortly thereafter, Prof. Schneider and I had the inspiring idea to write down the various Building Biology factors that have to be checked when assessing buildings, bedrooms, workplaces and properties. We were after a guiding thread, a structure, a paper that had not existed before to be published in the IBN Magazine Wohnung+Gesundheit and to serve as a guide for the future of Building Biology. He encouraged me to write the first draft. Thus the Standard was born and served as a working paper. After adding four more years of experience and insights, the so-called Standard of Building Biology Testing Methods was published in 1992. Shortly thereafter, the first Building Biology Evaluation Guidelines for Sleeping Areas followed as a supplement to the Standard, another pioneering work, and a few years later the next supplement followed, the Building Biology Testing Conditions, Instructions and Additions. Now the Standard was complete.

It was also Prof. Schneider who asked me to write the book "Stress durch Strom und Strahlung" (Stress from Current and Radiation) and to base it on the Building Biology Standard and publish it with the IBN. And from 1990 onward - again under the leadership of the IBN - I began teaching my first training seminars, basic and advanced seminars on Building Biology testing technologies, methods and conditions several times a year; first in Germany, then in neighboring countries, later also in the United States.

Some principles were very important to Prof. Schneider and I remember well the urgency with which he shared them with me, thereby kicking at my open door:

Standard, Guidelines, seminars and book should

- Take a **holistic** approach
- Strive for **feasibility** and exercise **prevention** at all times
- Be based on **practical experience**
- Use **nature** as a guide and role model and, if possible, be supported by **natural sciences**
- Be **independent** without compromise
- Seek cooperation with **medical doctors**, therapists and other health care professionals
- Be **easy to understand** for everyone and - last, but not least - be **human**

Take a holistic approach

Taking a holistic approach means: Ideally, all Standard subcategories are taken into account during a Building Biology assessment of a house, bedroom, workplace or property, rating them individually as well as a whole. As much as possible, leave nothing out. It starts with the exposure to physical risk factors (electrostress, wireless radiation, magnetic fields, radioactivity, sound, light...), goes on to chemical risks (indoor toxins, pollutants, metals, fibers...) and indoor climate factors (air quality, humidity, odors...) including microbiological risk factors (molds, yeasts, bacteria, allergens...).

It is this holistic detection of biologically problematic environmental influences in buildings and their elimination or reduction that is at the core of Building Biology Testing. Each individual subcategory of the Standard has its place in an assessment. Any one of them could tip the scales. Even if a specialist is a whiz in a given field, the overall picture is the first priority in Building Biology. If health authorities, universities, institutes, medical doctors, health insurance companies, experts and the like lose the overall picture and present only partial information about the harmful influences of our living and working environments, then there lies a special risk in this one-sidedness, in this half-truth. The affected person - our client - lacks this overall picture, and he or she may suffer just under this influence which was not considered by this expert focusing on only one single area. Any factor can be important to draw biological conclusions. There is always a last drop that brings the barrel to overflow. The comprehensive overview of the entire range of risk factors is the basis for meaningful and promising remediation recommendations and also for targeted diagnostic as well as therapeutic decisions on the part of the physician. This unique, powerful and unrivaled holistic approach makes current Building Biology services stand out.

Many factors are interrelated with each other in an unfavorable way: Dust, for example, likes to trap allergens, fungi, pesticides, heavy metals, radon and other pollutants, holding and distributing them in indoor spaces. Static electricity on synthetic surfaces, in turn, attracts dust. Dust decreases the important air ion count and ruins the entire indoor climate. Too little ventilation, on the other hand, promotes dust, a lack of small ions and the accumulation of pollutants in the indoor air. Small causes with diverse effects. Moisture, for example, causes molds and bacteria. Too little ventilation promotes moisture and accumulates carbon dioxide. Carbon dioxide, in turn, is popular with fungi; it is like fertilizer for mold growth. A complex tangle of interrelated factors. This also applies to electromagnetic fields. They attack our immune system and damage it. They also promote growth, aggressiveness and toxicity of molds, yeasts and other microorganisms, which for their part once again put even more strain on an already stressed-out immune system. Electromagnetic fields make the blood-brain barrier more permeable so that more toxins can penetrate into the brain and, at the same time, hinder the body's detoxification ability. There many of these types of vicious circles; more about this later. Among

others this is why it is so important to use a holistic approach when assessing a given space and to fulfill the Building Biology concept in as many subcategories as possible.

Strive for feasibility

Striving for feasibility means: Reducing any risk, regardless of exposure limits, guideline values, including Building Biology ones, and other recommendations. Our testing is about the professional assessment of critical environmental risk factors in buildings and the minimization of those factors within an individual's framework of feasibility. What is feasible or not is decided by the client in cooperation with us. We detect, inform, make suggestions and are there to help. It is the goal and aim, with an expert selection of diagnostic options, to identify, locate and assess the sources of abnormalities to help create a living environment with as few detrimental exposures as possible. To be feasible is the priority for all measurements, assessments and remediation. Our guidelines, recommendations by other experts and scientific knowledge are complementary to each other and serve as a guide. Less is often more: less stress, less risk. Less risk cannot harm. Irrespective of laws, recommendations, opinions and prejudices: Let us reduce what we can.

At the time, we already appreciated a guiding principle of the official Bavarian building regulations, and not only there, in the building regulations of all federal states and in the German building code: "Buildings are to be built, preserved, modified or repaired in such a manner that they cannot threaten or endanger human life and health as well as the natural basis of life." In addition, "unacceptable or preventable nuisances" must be avoided. Let us think about it. Buildings shall not endanger life. This is understandable. After all, I would like to live in an apartment and not die there. According to official opinion, buildings are also supposed not to threaten or endanger human health or to even cause preventable nuisances. Indeed, a supreme standard.

What about EMF levels that exceed low-EMF computer monitor standards in every third bedroom, in every third children's bed? This is a threat to health that is almost always preventable. Are the countless, ever transmitting cell phone, computer and other wireless communication technologies not a health hazard even though it is well known that they alter brain wave activity, open the blood-brain barrier, initiate oxidative stress, attack and injure nerves, cells, hormones, the immune system and fertility and that the World Health Organization declared this microwave radiation - like magnetic fields from electric power - to be a cancer risk for quite some time? There is still too much toxic formaldehyde in particleboards, furniture and furnishings; still too many toxic solvents in paints, varnishes and adhesives; too many plasticizers in wallpaper, vinyl floors and carpet foams; too many PAHs under parquet floors and not only there; too much of the highly toxic legacy toxin PCB even in schools and preschools. What about disease-causing pesticides that even today are hiding in numerous wood preservatives, carpet preservatives and insect sprays? There are still people dying from the consequences of the long-banned legacy toxin asbestos. And what about indoor climate, radon and mold problems as a result of an airtight building envelope, poor ventilation and excessive thermal insulation? I could continue with many more questions, starting with "What about...?".

And there are already new threats at the horizon, ubiquitous risks that have not been examined and assessed at all for their effects on humans and the entire environment like nanotechnology, the so-called "technology of the future," or the rapidly increasing sources of wireless radiation: ever more cell phone radiation outdoors and indoors, ever more TETRA and LTE, ever more Wi-Fi, and all of this also in hospitals, schools and, as requested by the German minister of family affairs in spring 2016, now even in preschools. They don't even stop at exposing sick people and children to this hour-long bombardment of strong, critically pulsed microwaves for hours. Still more smart meters, smart homes, smart grids, smart energies. Everything smart?

The official regulatory requirements are even more demanding because: buildings shall not endanger the natural basis of life; on the contrary, they should preserve it. Is it not a threat to the natural basis of life when a simple voltage test pen starts to glow when touching the skin of a person exposed to electric fields common in our living environment because his or her body is under so much EMF-induced tension? This does not happen anywhere in nature. Where is this natural basis of life as required by law when

a compass needle can no longer find due north and starts spinning around its own axis on an innerspring mattress, office chair, hospital bed or in the vicinity of steel-reinforced concrete? There is also not a single square meter in God's creation like that. Can we still call this protection of the natural basis of life when tens of thousands new cell towers and countless millions of DECT cordless phones and Wi-Fi Internet connections spread pollution through the ether to the last corners of the world and our environment, our homes, and all living creatures are constantly radiated with microwaves that are not found in nature like this? This lousy light quality, intense electrosmog and annoying flicker frequencies of many millions of compact fluorescent lamps have nothing to do with the natural basis of life, really nothing at all. This also applies to the rapidly increasing number of wind turbines, which cause discomfort with their foreign infrasound signature. The annoying humming and vibrations of geothermal heat pumps and so many other machines, engines and rotors have nothing to do with protection, on the contrary. Are the countless chemical toxins and mixtures that currently exist in and constantly being added to our living spaces already considered to be part of the basis of life?

It seems to me as if Building Biology consultants are the only ones who actually take the lip service of the building code seriously, take responsible action and try to make the best of this dire situation. Let's get started, I thought 30 years ago. Let's keep going, I say today. Let's show courage, engage and help. Let's be curious and inconvenient. Let's tackle it - with a healthy mind, a whole heart, good gut instincts, a pinch of wisdom and a solid sense of responsibility - and success will be on our side. At this level of challenge where mind, heart and gut instincts must work together, where so many people can receive help in a most unbureaucratic and uncomplicated way, this is where a profession can become a vocation or a vocation a profession.

Exercise prevention

Striving for feasibility also means: exercise prevention. Prevention is better than cure. Politicians, authorities and scientists are fond of talking about prevention; however: they are hardly ever serious about preventive action. Critical experts, medical doctors and scientists warn: "The government does not at all meet its obligation to exercise precaution, the basic idea of good environmental policy, and to minimize the existing risks by law. Priority is given to the profits of industry. The precautionary principle is undermined and accountability ignored out of pure greed for profit. Playing down and obscuring risks has taken the place of precaution." And most modern consumers are not that big on precaution, either. They will only wake up and react when the horse has already escaped. Until that time, they take part in almost anything that is presented to them as indispensable.

We Building Biology Testing Experts prefer to side with what the countries of the European Union signed in the Treaty of Maastricht, namely: "Based on the precautionary principle, society has a duty to take prudent action when there is sufficient evidence of a risk, but not yet one hundred percent proof, that inaction can have harmful consequences." Or what the heads of state at the Environmental Conference of the United Nations in Rio de Janeiro concluded: "In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation." However, postponing is done regularly. There is plenty of evidence. There is way more than just a few specific suspicious facts and assumptions. There is serious evidence, serious proof of harmful consequences - a hundred times, a thousand times, worldwide. Yet, there is no political action, no response, no prudent action and no precaution. There is no response as agreed; instead, all agreements and obligations are broken and the holding back takes suspiciously long, far too long. What are they waiting for?

We like it when the EU Commission states: "A potential risk can still be present even if there are not sufficient or adequate data to establish the extent of the consequences of the risk. Therefore, the precautionary principle must be applied in such situations, in particular." We find it at least honest when the Ministry of Health appeals to the personal responsibility of the poorly protected citizens: "Everyone should take care of their own low-radiation living space." Sometimes, public agencies even make a few useful recommendations. However, what is not talked about too often is the fact that many of

the exposures unintentionally penetrate the living space from the outside and then it becomes difficult to take personal responsibility. The Federal Ministry of Health states: "Effective prevention is essential for avoiding diseases from developing in the first place." Building Biology is effective prevention. The Federal Office for Radiation Protection demands: "Keep every exposure to radiation as low as possible." The radiation protection officials also say: "Whenever constant exposure to electromagnetic fields can be reduced, it should be done." Great, let's do it.

We are not too attached to overly detailed guidelines. We do not want to wait for the double-blind study to be reproduced umpteen times, the peer review to be checked umpteen times, the placebo-controlled lab test to be carried out umpteen times, the final conclusive proof of a mechanism of action that is recognized by all, including the critics and also the industry. We want to act spontaneously - as a precaution, a prevention. And we show that Building Biology is a pleasant disappointment to those who think that our world cannot be improved.

As to the proof of an effective mechanism, let's have a look at one example: electrosmog. We all know very well that electromagnetic fields, microwaves, wireless radiation and the like can cause damage, can make us sick and can cause or promote cancer. There are biological effects, which have been scientifically verified numerous times and reproduced multiple times, whose influence, for example, may alter brain wave activity and open the blood-brain barrier, cause problems with sleep, hormones and the immune system, including nerve and other cell damage. There is hardly any other disease-causing factor about which research findings are so clear as in the case of the so-called electrosmog: hundreds of studies with clear results. But still no scientific recognition. Why? Because something essential is still lacking, namely the proof of the mechanism of action, the exact understanding of the procedures leading to the damage, that is, why something happens how and just like that and not in any other way. As long as all those details have not been clarified, there will be no recognition despite cancer, despite sperm problems, despite rouleaux formation in the blood, despite dizziness, despite a lack of concentration and so on. Again and again, the representatives of interest and lobby groups can always return to this lack of understanding of the biological processes and keep critical and dangerous facts under cover and avoid legal consequences for a long time. This is a huge dilemma of established science. As long as the powers that be insist on this mechanism of action, scientist can declare almost anything as unscientific. Because in most cases - like electrosmog - this mechanism of action is not yet known or recognized by everyone concerned. On this basis, science can be used, twisted and misused for anything. Science becomes ignorance. When I truly know that something causes cancer, what for do I need the complicated mechanism of action then? It's time to act. But action is not taken. We don't play this kind of game.

Besides the many standard tasks in Building Biology such as home, bedroom, workplace, and property assessments as well as material and product tests, real estate checks and consultations, we more often than not deal with particularly vulnerable populations who confide in us. We owe them a special responsibility. This is our strength and uniqueness. This is a special type of precaution and follow-up care. We are not only responsible for average people, but also and especially for those most vulnerable among us: the unborn, children, seniors, people with sensitivities, those who suffer from major diseases, who are chronically ill and cancer patients. Some of them have no time left to wait for a confirmed finding for the umpteen time. They must cut their losses and act. These people trust us and appreciate our efforts. What a wide spectrum ranging from preventive to life-saving action.

Practical experience

Experience has top priority. We like to hear it when the German Federal Supreme Court makes a pioneering decision: "The danger posed by wireless technologies does not have to be already proven by comprehensive research. The experience gained in practice and everyday life is sufficient to be able to conclude from this as to whether a new technology poses a threat to the general public or not. We trust our practical experience we make in real life on an ongoing basis and the correctness of our procedures that have been confirmed again and again by numerous successful health outcomes after thou-

sands of measurements and consultations, culminating in the publication of our Guideline Values. We vouch with our experience that exposure levels above our Values may lead to risks, health problems, impairments, and often enough have done so in the past. Experience is the driving force behind our Testing Methods: experience with aspirations for a scientific rationale.

More often than not did our pioneering work pave the way for scientific debate and recognition. We are pleased when our findings and demands are heard, including scientific, official, political, and even judicial representatives. Frequently, it was the experience and creativity in Building Biology and the courage to raise issues that resulted in better protection of human health through more reasonable assessments and more compatible products. We are happy about our success because so many people became healthy again and enjoy a much better quality of life.

After 30 years, Building Biology and its specialty, the Building Biology Testing Methods of which we will talk primarily here, have outgrown their beginnings. We can work and apply our experience from the past to the issues we are familiar with, which is a lot. And we continue to be careful. As always, there is still much to learn, comprehend, study, question and explore. So many questions can already be answered, some are still open and others have not even been asked yet.

In my early days, before I became self-employed as a Building Biology Consultant and Testing Specialist, I carried out about 500 investigations of sleeping areas free-of-charge over the first three years, just to gain experience. Relatives, friends and colleagues had to serve as clients. The offer went to medical doctors of my hometown Düsseldorf and surrounding area; they readily sent me patients. I put ads in local newspapers so that interested parties could get in touch with me. I gave presentations at adult education centers in my area. Successful assessments started to pile up, reason enough to continue.

My idea to give the bed center stage in a Building Biology assessment turned out to be a right choice. Nowhere else do we spend more time and return to the same place repeatedly. Nowhere else are we more sensitive, vulnerable, and defenseless in terms of hazardous conditions than during the sleep and regeneration phase. Relaxation is what is called for here, not tension. So we have gathered the most extensive experience at sleeping areas and learned from them, especially with sick people, more frequently with seriously sick people, sometimes the terminally ill. If patients and those who suffer stabilize and become healthier and even healthy again after the detection of physical, toxic, indoor air and/or microbiological exposures and their remediation, this is very convincing and proof enough. Then we knew what causes discomfort, what is relevant to health, what makes sick, nervous, vulnerable, sleepless and what prevents healing. We knew what is stressful, harmful, dangerous and even life-threatening. We could assess what is needed and right, where we have to pay attention and what we have to take seriously. Now we also knew what we have to watch out for concerning new buildings and renovations or home inspections so that healthy people would not be exposed to any health risks. We were able to recognize what is important for healthy home consulting, planning and prevention and to set things on the right track from the start so that no unnecessary damage would occur later on. The Building Biology Testing Methods and its Guideline Values could and did evolve based on our experience with sick people in their "sick" living environment where they spend most of their time, especially in bed. It was those numerous and successful case histories that provided us with such a solid foundation. You can learn much from those who are sick and how they respond to their environment. Case histories are the best experience.

Take solid basic and advanced training like is available from the IBN, add further training from any of the associations and advanced colleagues, acquire professional measurement equipment and analytical methods in combination with experience and some instinct and intuition, and voilà! a Building Biology Testing Specialist is born. First: learn. And then: Skill comes with practice, learning by doing. Truth cannot be studied, but experienced. And if you don't have enough experience yet? Trust others who have practical experience, who are credible and willing to share until you are ready. Experience is the best quality assurance. It leads to genuine knowledge for which one can vouch, a security in which one can confide and build on. This does not happen from just reading

something in the media or on the Internet, from believing in hearsay or wishful thinking, from just being a smart aleck or prejudiced. Experience is reliable and beyond any doubt. It makes one mature. Experience is the best teacher.

In its 2009 newsletter, the German Building Biology Association (VB) puts it in a nutshell: "A very large part of the Building Biology knowledge is shared through the exchange of ideas from colleague to colleague; it is made available through seminars and the tireless research, volunteer work and cross-border meetings. A large part of that, we cannot acquire through reading. We depend on the experience and love of experimentation of our colleagues. In short, like no other group of professionals, Building Biology forms a community that lives by exchanging ideas and sharing experiences."

Natural and empirical sciences

The natural sciences in collaboration with the empirical sciences. I like both concepts. They both suit the approach of the Building Biology Testing Methods. The natural sciences work empirically, research, monitor, measure, analyze with proven, reproducible methods. They deal with the natural laws following a set pattern. They are one of the main foundations of technology, medicine as well as nature conservation and environmental protection. Empirical sciences are based on experience and, of course, also work empirically, gaining their knowledge mainly through observations, experiments and surveys, both in the field and in the laboratory. If the practical experience of Building Biology meets with theoretical scientific research or may even become confirmed, this is optimal. If not, experience remains more important even if the confirmation by science is still lacking. Experience paves the way for research. It is the one that often provides the impetus for research to kick into long overdue action.

In some areas, established science came to results similar to the ones in Building Biology; in other areas, much later, not at all or not yet. Research often lags behind experience for years and decades, sometimes even generations. Many people (not to mention animals and the whole of nature) have been suffering for a long time from a variety of exposures long before they become an issue that is discussed and addressed by universities, official agencies, professional associations, the TÜV and so on. Facts remain facts even without any evidence. Let's not wait until the experts agree, the politicians wake up and the regulations grant permits. Let's avoid excessive exposures, especially in the face of chronic exposures. The scientific underpinnings are often a long time in coming - too long. We are not so patient.

An example: The World Health Organization (WHO) has been evaluating the extensive body of international scientific studies that found an effect of electromagnetic fields on cancer and could not help itself, but had to classify them as "possibly carcinogenic to humans." And the evidence is based on an exposure level range that had been published in our Guideline Values ten years earlier. Thus electromagnetic fields end up in the same critical WHO category Class 2B in which also pesticides such as lindane, fungal toxins such as aflatoxin, heavy metals such as lead as well as gasoline, diesel and car exhaust can be found. This WHO classification applies to exposure levels (hard to believe, but true) that are 300 times lower than the currently legal exposure limits as set out in the German Electrosmog Ordinance and that the German public is still expected to tolerate. Once again, it took three decades from first concrete findings to a first official conclusion, and this from highest authority, the WHO. But still: The exposure limit remains in place, no effect noticed. Once again, waiting another 30 years or 40 or 50? Like so often? It is about cancer, childhood leukemia, brain tumors, sick people and the dead! It is about everyday influences by which millions are affected.

This is just one of the many unfortunate prime examples of crazy, irresponsible and despicable politics. Although they know exactly that there is a disease risk, even a cancer risk, they leave the affected people in uncertainty for many years and, at the same time, ridicule them with an exposure limit that is several hundred times higher than the one recognized as a cancer risk. And: In most cases, this exposure limit does not even apply because it only applies to large fixed radio stations and towers, but not to telephones or other devices at home. Everyone has to look out for themselves. And again hard to believe, but true: cell phones, smartphones, cordless phones at the ear even exceed the

exposure limits; radio stations never. Once again, 1-0 for the industry. However, we don't play such sick games. We can do better.

Science is not the only benchmark. Science is a part of reality, a rather limited and rather modest one, which never encompasses the whole truth and cannot meet the requirements of a holistic approach, limiting itself to functionality that so far does not know much, is often misinterpreted and full of errors. It is good practice to be able to think and act in scientific ways, but it is bad when doing so in a biased and submissive manner. Sometimes you have to break out to reach a decent goal.

In Building Biology, the scientific standard of being objective, transparent, verifiable and reproducible also applies. Subjective procedures such as dowsing often fail in this regard, with their lack of objectivity and reproducibility, more contradictions than results. Our Testing Methods are more substantial than that: They cover biological exposures, environmental risk factors, harmful effects and dangerous threats with sensitive measuring instruments. Which does not mean that your inner voice, your gut instincts would lose their value. Measurements confirm, bring light into the dark, objectify assumptions, make suspicions tangible and allow us to provide easy-to-understand and credible results to other people, readers and clients. Experience, feeling, intuition, curiosity and so on are precious treasures. Paired with our favorite toys, the measuring instruments, this is a successful combination.

It can take us decades to convince science as well as politics, authorities, medicine and business communities that their industry friendly concept for the evaluation of electromagnetic fields - and not only of those - is obsolete, irresponsible, useless, naive and no longer scientifically tenable. We will continue shaking our heads in disbelief that there are binding exposure limits for hazardous substances at workplaces, but not for children's rooms. We do not want to accept that legally binding exposure limits are hundreds of times higher than the reproducible scientific findings of a cancer risk. We cannot emphasize it often enough that occupational exposure limits for electromagnetic fields are exceeded in every third bedroom. We do not understand why the official German Ordinance on Electromagnetic Fields only applies to public facilities such as high-voltage power lines or radio towers and not to the countless electric devices at home whose exposure levels can be even more powerful. Nobody can understand this: Many modern cordless telephones and baby monitors and almost all wireless Internet access technologies radiate and damage 24/7 - even when not in use, which makes no sense and provides no benefit. Do you understand why compact fluorescent lamps and wireless heating meters are forced on us, although we know that they are biologically critical? We will continue witnessing in bewilderment how people keep filling up clinics and doctors waiting rooms and are put away at psychiatric wards even though they only suffer from one thing, that is, environmental stress: far too many, excessive and chronic exposures to electric and magnetic fields, never-ending microwaves, noise (especially in the inaudible range), lousy air, formaldehyde, solvents, wood preservatives, plasticizers, flame retardants, PAHs, PCBs, mercury, too many and dangerous microorganisms and so on.

Also consult the following presentation (in German and English):
- *"Wissenschaft - wirklich?"- Gesundheitsrisiko Mobilfunkstrahlung, und nicht nur die: Wo bleibt die wissenschaftliche Anerkennung?*
- *"Science - Really?" - Health Risk Mobile Phone Radiation, and not only that: What about the Scientific Recognition?*

Nature as a guide

Using nature as a guide means: In indoor spaces, conditions should be similar to those in the surrounding, open and largely unpolluted natural environment. This should be the goal at least. For example, indoor levels should be similar to the atmospheric electricity, air ion count and quality, oxygen and carbon dioxide concentration levels of the natural outdoor air under normal conditions. And levels of particles, dust, bacteria and fungi should not be higher. Indoors as little static electricity as outdoors, a comparable, homogeneous, undisturbed Earth's magnetic field as in the open air, not much more radioactivity than common in the area. Also, indoor spaces should not be filled with more electrosmog, pollutants, radon, allergens or even more noise and so on.

There is no need to split hairs. Indoor spaces are not always as natural as desirable, except for the most important two square meters of our lives: the bed. If you like pure nature, get off the couch, go outside, enjoy fresh air and natural daylight. We don't mean to be dreamers. We aren't after an ideal world. We don't intend to turn a concrete block in the big city into a log home in the mountains. And I know, nature, too, can become dangerous which is why I don't eat poisonous toadstools, pay attention to ticks, don't swim along coasts where sharks are abound, don't stand in an open field during lightning and don't build my house on sand. Naturally, I protect myself against the inclemency of nature. But this is not the point. It is about using nature as a benchmark when it comes to human-made environmental factors that have not existed before and do not exist in nature now, that distort, disturb, interfere and extinguish the essential and life-controlling natural conditions. It is about comparisons that make sense.

At the slightest doubt, and I often have doubts, even today, for example, when confirmation is missing due to nonexistent or unacceptable exposure limits, when there is too little experience, too many disagreements, contradictory scientific statements, then nature serves me as the standard, provides me with essential guidance. Any continuous attack on nature can become a risk. Nature ensures a healthy live. In Building Biology assessments, we should not lose sight of this reliable foundation, always striving for what is as close to nature as possible. As envisioned by Prof. Schneider and myself in the past and reiterated by the Building Biology Association (VB) again today, our guiding principle has been and will continue to be: "Nature is the ultimate standard." Even the official building regulations mentioned above call for it: "Buildings shall not disturb or endanger the natural basis of life." Let us put our trust in nature and not in smart alecks and maniacs who squeeze the last drop out of our wonderful earth, who turn our world into a garbage dump, who obviously have declared war on nature, the very foundation of life including their own.

For even the once so undisturbed natural environment now shows alarming signs of human intervention. About 25 years ago, my measuring instruments showed in clean outdoor air at least 50 ppm lower carbon dioxide levels than today. And now these levels are steadily increasing: back then 320, 330, 340, 350 ppm and today already above 400 ppm. About 25 years ago, I also found much higher levels of air ions that are so important for breathing, oxygen recovery and other climatic and biological processes, sometimes twice as high as today, and at the same time, levels of fine dust and others particulates were much lower. Too much carbon dioxide, too few air ions, more dust and so on. Where will this end? With my sensitive measuring instruments, I myself have monitored the rise of radioactivity levels in the environment due to an increase in civilian and military uses, especially after nuclear power plant accidents. And often I have been frightened at how high the levels were, how little of this information is shared but rather covered up. It is sad, but we will not be able to change any of this too quickly: the mercury levels in the environment, for example, are gradually increasing instead of decreasing; asbestos is now found in the Arctic ice, PCBs in adipose tissues of whales and heavy metals in almost all animals and human brains; forests can hardly cope with the increasing levels of wireless radiation exposure and the advancing global warming entails disastrous consequences. We cannot just walk up and take down HAARP and not even make chemtrails go away overnight. We cannot just stop ten times more air travel and ten times more cruises than ten years ago. But we can make a difference in our immediate environment, at home where we live, especially in our sleeping area. By radically reducing and eliminating high levels of environmental risks, significant stress relief will be immediate and significant health benefits like quality of life, recovery, detoxification, performance and well-being will follow.

One current, challenging and extreme example that concerns everyone, though there are many other interesting comparisons with regard to nature as the ultimate standard: The official exposure limits for technical microwaves of wireless communication technologies are billions to trillions (!) times higher than the natural microwave background levels. And these very delicate natural background waves with their infinitesimal low levels control zillions of essential life processes - in us and the whole of nature. A phone call with a mobile phone, smartphone or cordless phone causes radiation levels at the ear that exceed - as mentioned earlier - even the absurdly high exposure limits. It's your own fault. When used in the vicinity of the body, Wi-Fi routers, most baby monitors and

microwave ovens emit radiation levels that are several hundred to several thousand times higher than natural reference levels - often even still at a few meters distance, occasionally even still at the next-door neighbor and beyond. Hundreds of scientific studies show evidence of dozens of biological effects and health risks. Authorities, medical associations, the EU, the WHO issue warnings. This, however, does not stop millions, indeed, billions of people to use these technologies and not only them, but also Building Biology Consultants who should know better. The digital wireless world: A new sacred cow has been born and everyone is game. I do not have to understand everything.

Independent

Prof. Schneider set an example of how to be independent. What he meant by this he demonstrated, among other things, with the IBN Magazine Wohnung+Gesundheit. There were no advertisements in his journal that did not fit with the basic ideas and requirements of Building Biology, no matter how handsomely they would have paid. An advertisement for dubious devices claiming to neutralize electrosmog? Unthinkable. An article with a smell of self-promotion or a tangle of conflicts of interest? No chance. He was not moved by fads. He could not be bought. This man was inconvenient. His need for uncompromising independence won out over economic interdependencies, politics, authorities, industry, lobby and all interest groups. Though he himself was a staunch scientist, he went beyond the widespread, established science, this version of today's science that apparently has the absolute majority and lets lobbyists and corporations line their pockets with money; the one that bows to industry instead of human life; the one that does not like independent, critical research at all; the one that is tirelessly trying to prove the impossible, namely that something harmful cannot hurt; the one that has no interest in the other version of science that creates true knowledge and actually cares.

We Building Biology Testing Specialists want to be independent and could not care less about science when it loses sight of people's well-being or becomes dependent on politics and industry. We work, measure, analyze, examine, advise, assess in an independent and responsible manner based on science, and I, too, feel obliged to it, to the version of science that serves human life. In addition, our strength, originality, future, our sense of purpose is the alternative to the overly cerebral and impracticable science. We came into being, among other things, because of this one-sidedness, narrow-mindedness and bias of "established", universities, authorities, insurance companies, experts, DIN, VDE, VDI... We are very much concerned with critical exposures that other experts won't address and wouldn't want to touch with a 10-foot pole. We thrive on taking up challenging tasks, going after exposures that cause a great deal of discomfort in people who otherwise feel left behind and forgotten by "official" agencies. We get started where others leave off. It was like this right from the beginning and it still continues to be our strength. Those who only rely on regulations, exposure limits, official commissions, official risk researchers and health authorities in the face of the many environmental risk factors in our living surrounding, in our everyday lives, will, in many cases, be abandoned. Who of those in official agencies actually care about the environmental factors such as electric, magnetic and electromagnetic fields, radioactivity, geological disturbances, ultrasound, vibrations, flickering light, about the myriad of indoor toxins and pollutants, heavy metals, particulates, CO_2, air ions, fogging...; who actually cares not only about molds, but also about yeasts and bacteria..., if we don't?

If we had not had the courage to go as pioneers where others did not over the last three decades, the Building Biology Testing Methods would not be where and what they are today. Our service is there for people when they are sick, suffering and in need, and for provisions. It is not there to doggedly meet some questionable guidelines and absurd regulations. It was this unrestrained basis from which the Building Biology Testing Methods began to grow and have become successful. We were engaged, motivated and admirably pragmatic. We did not vie for favors from politicians, administrative bodies or the industry. We did not need either cuddling from universities or stamps from authorities. We did not strive to meet inhumane exposure limits, but to reduce risks whenever possible. We were never standardized by DIN. We did not sacrifice our independence for a false sense of safety. Freedom cannot be safe.

Benjamin Franklin said: "Those who would give up essential liberty, to purchase a little

temporary safety, deserve neither liberty nor safety." Creativity, openness, joy of experiment go rarely hand in hand with rigid rules, regulations or limits. Guidelines, accreditation, certification: yes, but only if they do not restrict us. Not those we can find, for example, far too often in the medical world to the advantage of the insatiable pharmaceutical industry and to the detriment of the patients. We are independent environmental testing experts, free consultants, also largely free from the structures and constraints of the publicly appointed and certified colleagues. We have our concept, our experience and ideas and make them available. We derive our knowledge from everyday life experiences and are committed to prevention, providing valuable information, setting standards, helping people and the environment and fulfilling our responsibility.

Cooperation with health care professionals

Regarding the cooperation with medical doctors, naturopaths and other therapists, Prof. Schneider wrote in the preface of the first edition of my book "Stress durch Strom und Strahlung" (Stress from Current and Radiation) already 25 years ago: "The environmental factors related to Building Biology, electromagnetic fields, geobiology, indoor climate, toxins and microbes are not only essential to health and disease, but must also always be an essential part of the diagnosis and therapy of a medical doctor. The unsuccessful treatment of symptoms must be replaced with the holistic and successful treatment of the cause(s). An entirely new and long overdue dimension of health care and prevention opens up with this approach. The close cooperation between Building Biology Experts and medical practitioners, naturopaths, therapists and other professionals is important for facing the flood of diseases and environmental disasters with effective treatments. It is a missed opportunity and must be regarded as a failure to render assistance if this kind of cooperation, which is still far too rare today, does not occur."

The environmental physician and book author Dr. med. Joachim Mutter from Freiburg knows from experience: "Many patients can be helped by Building Biology. Besides diet and detoxification, another major health strategy is the creation of a healthy living environment based on Building Biology. Get a well-trained Building Biology Testing Specialist into your home who can assess your living space and explain what you can do to improve it. If you want to stay healthy or want to become healthy again, Building Biology should be part of your lifestyle. Such an assessment has to be part of any medical treatment. At least 20 to 30 percent of people suffer from a poor environment."

The environmental physician, gynecologist and former chief physician of the Sankt Elisabeth Clinic in Straubing, Prof. Dr. med. Volker Zahn, affirms: "If a medical doctor thinks he can help his environmentally ill patients without the knowledge of Building Biology, without the knowledge of critical toxins and electromagnetic influences, then he is deceiving himself."

Dr. med. Christian Petersohn and his brother Dr. med. Hans-Joachim Petersohn, both general practitioners and naturopaths in Düsseldorf and familiar with environmental medicine, agree: "It is time that Building Biology aspects are more often integrated into the work of general practitioners. As medical professionals, we are called to search more often for causes and not only treat symptoms. Building Biology, in particular, is a great resource to help find many causes of diseases."

The general practitioner and natural healer Dr. med. Dieter Aschoff from Wuppertal, the first doctor we worked closely together with, said more than 30 years ago: "The objective detection of Building Biology risk factors with measuring instruments is important."

We introduced Building Biology to the medical profession in our own way. Not only directly through publications in special journals and presentations at medical conferences or the Medical Week in Baden-Baden, but also especially through the following back door: Even if not requested to do so, we would send our testing report, including the measuring results, explanations regarding the measurements performed and our recommendations, to the treating physician or naturopath of each of our clients who ordered environmental testing from us for health reasons (it almost always was about health reasons). In this way, we were able to make our work known and transparent. Quite often the treating health care professional was pleasantly surprised because the patient's

complaints improved or completely disappeared after having completed the recommended remediations. A medical doctor will not forget anything like that too quickly. This information spread more quickly than any advertising in the best medical journals. After several hundred assessments and medical reports, other medical doctors, naturopaths and therapists became more and more convinced that there was something to this and came on their own to ask for our support. These were first, instructive steps.

Especially in the early days, we were thus "controlled" by conventional and alternative medical practitioners and naturopaths, which on the one hand was and is exciting and surprisingly often affirming, and on the other hand also annoying. Because in some instances, during the examination of the patient with electroacupuncture, bioresonance or other alternative medical methods, the diagnosing medical practitioner diagnosed an underground watercourse under the bed, electromagnetic exposures or a magnetic field suggesting an innerspring mattress, but we were unable to detect any such source on site. Then the confused client asked: "But the doctor said...". And the doctor is always right... It was not always easy, but rewarding, to convince the patients and their physician or naturopath that we, too, can be right. Sometimes the suspected terrestrial radiation turned out to be electrosmog or the Hartmann grid a steel truss in the bedroom floor. After conventional medical blood or urine work and a subsequent Building Biology survey, it became more and more apparent that yeast infections were not only caused by contagion or a stressed-out immune system, but rather by the yeast-contaminated refrigerator, shower head or water filter. That the reasons for diseases caused by mold are not only due to moisture problems in homes, but often also due to contaminated food, cereals, muesli, nuts, teas and so on, even by older mattresses and pillows. Welcome to the biotope bed. That a mercury body load is not always the result of amalgam fillings alone, but even more often the result of too frequent fish consumption or a recently broken fluorescent tube or compact fluorescent lamp, respectively. That disease-causing bacteria can hide themselves in huge numbers in the otherwise healthy sprouts and sometimes also as biofilms in water installations. The medical practitioners completed and checked our work in their medical ways and, in turn, we also checked their work through our measurements. That did not always match, but surprisingly often. When the findings matched, there was great joy, and if not, both sides followed up and learned.

To date, my team members and I have worked together with more than 100 physicians and some alternative practitioners. At first, there were only a few medical tests available for detecting environmental exposures and diseases: a urine or chewing gum test for heavy metals because of amalgam fillings, a blood test for wood preservatives, an allergy test for fungi or house dust mites. More and more importance was attached to asbestos. When no major mold growth was visible on walls, mold was not taken too seriously. No one spoke of electromagnetic fields, if at all, only in connection with high-voltage power lines and transformer stations, later also with microwave ovens and these newfangled computers that were entering offices and here and there even our homes. Compact fluorescent lamp was a foreign word. People talked all the more about underground watercourses, faults, everyone knew al least a bit about geopathic zones, which have always been the domain of dowsers. Radioactivity, like radon, was not talked about at all, certainly not before Chernobyl. Infrasound, what was that? Today, this situation has fortunately changed a great deal.

In the beginning, the world of Building Biology testing did not look quite as bright as it does today. There were only simple devices that were able to make electric fields of home wiring and magnetic fields of overhead transmission lines, transformers and dimmers audible with humming sounds, or which confirmed the presence of radio, military, radar and other transmitters, which back then were only a few, with squeaking, crackling and hissing noises. You could buy simple wiring locators in the hardware store for detecting the wiring in walls, which would light up on a person's skin when exposed to a strong electric field, and simple voltmeters that displayed the body voltage in numbers. There were compasses whose needles started spinning on innerspring mattresses. This misnomer electrosmog had not yet been invented. Anyone who owned a mobile phone was rich and needed a briefcase to carry those heavy behemoths around.

It was inconceivable then that the electromagnetic pollution of the civilized world would assume such proportions as seen today, that the hunger for energy and the addiction to

digital data would grow so excessively. The confused spirits had not yet been awaken who would invent so many cordless phones, wireless networks, baby monitors and other wireless technologies that are incessantly radiating with biologically critical frequencies and exposing our bodies, minds and living spaces, penetrating right into our bedrooms and children's rooms. There were no smartphones, no tablets yet, not even the Internet. It was not conceivable that the attractiveness of wireless communication technologies and the willingness of users to accept risks would increase so much that today there are more phones than ears and, at almost every street corner, there are large cell sites on towers and roofs. Who could have anticipated that today we have a Protestant church that, in addition to the already existing hundreds of thousands of wireless transmitters, plans on adding another round of tens of thousands of Wi-Fi hotspots and calls them GodSpot. GodScorn would be more to the point.

Medical practitioners, naturopaths, therapists, laboratories, other experts and we experimented a lot, researched, investigated, evaluated, cared for many patients and had successes that would keep us going. We kept gathering more and more exciting case histories and have become increasingly surer of our surveys. We helped developing better, more accurate, more sensitive and reliable measuring instruments, sampling and analysis methods. We added our experience, ideas and requirements. The equipment manufacturers have largely put our requirements into practice. What modern measuring instruments can do today we could have only been dreaming about in the early years. If we would like to solve problems and cure illness, we cannot just suppress symptoms, then we have to track down the sources of pollution and do it with precision. Thus Building Biology and its Testing Methods, in particular, became an essential part of holistic medicine and medicine one of our important companions.

Also consult three presentations and the interview about the cooperation with medical doctors:
- *"Baubiologie und Ganzheitsmedizin - untrennbar!"*
  [Building Biology and Holistic Medicine - Inseparable!]
- *"Baubiologie und Umweltmedizin"*
  [Building Biology and Environmental Medicine]
- *"Strom und Strahlung - Stress auch bei der Elektroakupunktur"*
  [Current and Radiation - Stress also with Electroacupuncture]
- *"Baubiologie und Umweltmedizin in der ärztlichen Praxis"*
  [Building Biology and Environmental Medicine in Medical Practice]

Simple and easy to understand

Please keep everything simple and easy to understand so that anybody can understand it, so that the information can reach those who need it in the first place; namely, the persons who request our help, trust in our expertise and pay us. Clients, those who are sick, those who are seeking help and those who would like to take precautions are not served well when confronted with too much theory, complicated technology, never-ending lists full of measuring results with two digits after the decimal point and tons of technical jargon too foreign to be comprehensible. Clients want simple, practical and binding answers: What is conspicuous? What's wrong? What am I exposed to? What can turn into a risk? What can I do? How can I improve what? And if a client does not really understand what it is about, their motivation for change will be rather low and, in the end, also their and our success.

Prof. Schneider, as already mentioned, encouraged everybody to be courageous, original, committed and contagious, to rely on and trust your experience and communicate the gained insights in an easy-to-understand format. At the same time, he wanted us not only to take familiar, established paths, but to also explore new ones such as science, physics, technology, chemistry, biology and so on. To take their complexity away and to find answers to open questions, improve weaknesses and close gaps where politics, industry, research and medicine leave off. To him, Building Biology was empirical, the necessary and overdue alternative and companion to the conventional way of thinking, the one-sided, theoretical approach. And simple and easy-to-understand does not mean to be inept and unscientific.

To explain something in simple and easy-to-understand terms is an art in itself. Often it

seems easier and more attractive to explain things in complicated terms, to use confusing units and to throw Latin names around. This seems more impressive and scientific, but it often only conceals insecurity and a need for recognition. There is another way. Some Building Biology Testing Specialists come from a practical background and are neither qualified nor certified as a physicist, engineer, chemist or microbiologist nor as a medical doctor or professor. Why then pretend as if? A good technician or craftsman with a solid Building Biology training, a reasonable and well-rounded set of testing equipment as well as a great deal of experience and empathy can be a better investigator and consultant than a graduated doctor with a PhD. Sometimes, it is fortunately also the other way around. In the ideal case, both worlds come together in one person, and even more.

Building Biology is basically simple. Is it not easy, uncomplicated, relaxing and satisfying, free and independent to focus on achievability? To be guided by nature? To build on experience and offer experience? To integrate science and research? To act in a holistic and precautionary manner? And in doing so, not being forced to fit into a cookie-cutter mold? To present the information in such a way that our counterpart can actually understand, integrate and implement it? To listen with sympathy and to show compassion? To experience again and over again that our concept is successful when sick people get better, even healthy; when those suffering with severe pain have no more pain; when those being desperate develop an optimistic attitude; when high-strung nerves turn calm, tension is replaced with relaxation, fragile minds become more grounded; when bed wetters become dry, sleeplessness turns into restful sleep and therapy-resistant patients start responding again? It is really not that difficult to be truly professional and good plus easy to understand and practical plus transparent and comprehensible plus human and compassionate.

Human and honest

In all things be human and, whatever that means specifically to you, there is enough room of interpretation for everyone. To me this means to never lose sight of the goal and to give those who are worrying and suffering priority. This is what we owe the people we are engaging with. Many of them often have a long journey of suffering behind them, from one physician to another clinic and from one naturopath to the next faith healer. Many are more sensitive and frail than the average person, need to take better care of themselves and exercise greater caution and are in urgent need of protection. Some have to apply the emergency brake in their lives. Some have already had enough self-appointed and questionable geobiology consultants, feng shui consultants or dowsers in their homes and are confused about their contradictory opinions and recommendations.

At first, it is important to acknowledge and gently dispel the fears many people have that something bad is about to happen - like having to sell the house, blow it up, build a new one out of clay or straw, move away or facing high costs for remediation actions - when they call a Building Biology Consultant and Testing Specialist for help who enters their intimate living space, probes behind appearances and takes a very close look at, behind and under the bed; who searches with sensitive instruments for factors that can be harmful; who sniffs, detects and reveals; who makes the invisible visible and the inaudible audible; who replaces concerns and beliefs with information and knowledge. They just don't know the good news yet, that is, in at least 90 percent of the identified risk factors, one can reduce or even eliminate them in more than 90 percent of all cases, and in most cases it is pretty easy.

To be human also means to be honest. We can do a lot, but not everything. Let us see our possibilities but also realize our limits. Let us say what we can do well and what (yet) not, what is possible and what (yet) not. Let us refer clients to more experienced experts or specialists if we are overwhelmed. We are all on a journey, and the client is part of the journey. Somehow we are all on this learning process, some have walked this path longer than others, some have much experience and others less, some have large suitcases full of expensive measuring instruments, others more modest. We are still pioneers on a not so well-trodden path, even after three decades. There is still so much to explore, to track down, to give cause for thought and to courageously expose inconvenient truths. We already have a great deal of answers, but far from enough. Again and again, we come up against the unexpected. We have not forgotten how to be amazed.

And: Clients are the benchmark. Let's not do it like some (fortunately not all!) medical doctors, who marginalize their patients, send them to the psychiatrist or even pronounce them to be healthy, although they are clearly ill, only because they reach their limits (and they often reach their limits) despite their vast medical-scientific knowledge and skills, their modern ear trumpet called stethoscope (and we sometimes feel ashamed of using a compass...), and the imposing technical appliances and diagnostic possibilities. If a medical doctor does not understand or cannot find anything, then this is the patient's problem? If a medical doctor does not make any progress, then the patient is not supposed to have symptoms and complaints? This must not happen in Building Biology.

The forester and best-selling book author Peter Wohlleben said at the Markus Lanz talk show in TV in July 2016: "Science and medicine say far too often: This doesn't exist. Instead of saying: We don't know." This also applies to Building Biology. How often did I have to listen to: "This doesn't exist." It does exist! Let us be discerning: To not know something should be welcome as a starting point for caring, learning and experimenting. As long as our clients have problems that seem to be most likely associated with their living or work environment based on their own and detailed detective observations over longer periods, then our services have not yet been completed.

To be honest, we also need to be transparent and to document everything we do: measuring results, measuring instruments and analysis methods, laboratory reports, agreements, recommendations and remediation proposals, etc. We do not always have to follow exactly how it is set out in guidelines and regulations. Our reports must not all look alike and do not have to be as dry as those from TÜV, VDI, universities, many experts and most laboratories. We should use our personal touch to provide all the information in a clear and easy-to-understand language: what we did how, with what, when and why, making this process comprehensible, reproducible and controllable.

SBM - Standard of Building Biology Testing Methods

Three decades ago, the Building Biology Testing Methods were born, took shape and ran its course. This man named Prof. Schneider and his vision: I liked that and his views inspired me. I absorbed his requests, concerns and thoughts, matching them with my ideas and realizing that in the Standard, the Guidelines, seminars and books as well as in his Magazine Wohnung+Gesundheit. He was pleased with the results. This was always the benchmark for me and to this day, I felt and still feel committed to this legacy. He built a stage at his IBN institute on which the Building Biology Testing could unfold in cooperation with competent colleagues and professionals under his trustworthy and respectful patronage. Sometimes he had brilliant ideas, sometimes myself. Sometimes I found him too hesitant and overcautious regarding certain details, sometimes he found me too forceful, more rarely vice versa. Every now and then he put on the breaks when I would have preferred to step on the gas. In retrospect, this has often proven to be useful and correct. I still remember quite clearly that, in the beginning, he found three seminar days way too many. Participants would not tolerate this, certainly not on Sundays. Sundays were inviolable. In the end, we had eight days. This is how we complimented each other. Sharing essential goals and hopes - even if we were so different - we immediately and always understood, supported and respected each other for all those 30 years.

I had a hunch that there would be a great deal of work and there was even more: several thousand hours, many hundreds of phone calls, letters, mails, faxes, endless discussions, meetings and sleepless nights. We evaluated our current measuring results, remediation successes and experiences. At that time, there was not much of a Standard yet, even though we already had a foundation of 1000 investigations. Over the coming years, we continued to pay attention at home and building site assessments, to collect data and facts, successes and failures, to learn something new on a daily basis, to spread our wings, to exchange ideas with colleagues and to receive suggestions from all sides. More and more, the whole picture came together. We could refer back to about 2000 test reports, soon there would be 3000. More case studies and medical confirmations provided a growing solid foundation. Uncertainty turned into certainty. In 1992, the Building Biology Standard had evolved to a point where we dared to publish it for the first time.

Soon there were committed allies who got involved with enthusiasm in this Building

Biology task. In the first place and right from the start, I had intense discussions with Dipl. Ing. Helmut Merkel for so many days, weeks, months and years. We had countless phone calls until deep into the night. We shared our experiences and were always experimenting with something. He was one of the most important driving forces behind the Standard and all the Testing Methods. He lead seminars, developed measuring instruments, chaired the Building Biology Association (VB) - a real wizard with an endless supply of dazzling ideas. Uwe Münzenberg, who was a member of my team back then, contributed to the success, later on my current team members and partners Dr. Dipl. Biol. Manfred Mierau and Dr. Dipl. Chem. Thomas Haumann. Later Dipl. Ing. Norbert Honisch joined the group; he also added a great deal of passion, time and profound expertise to the common cause. Practicing Building Biology Testing Experts, physicians, critical scientists and other experts got in touch, offering their advice and support.

In 1999, we established a ten-member Standard commission that consisted of experienced Building Biology Testing Specialists and technicians. Everybody contributed to the Standard, improving, updating and making suggestions. In addition to the members mentioned above, Rupert Schneider, Johannes Schmidt, Peter Sierck, Dipl. Chem. Jörg Thumulla and Dr. Dipl. Ing. Martin Virnich joined the commission. Later on further assistance was provided by, for example, Dipl. Ing. Peter Danell, Dipl. Med. Frank Mehlis and Dipl. Ing. Jürgen Muck. Experts from the areas of physics, chemistry, biology, architecture and from analytical laboratories also offered their assistance. We worked together and struggled together. We were busy and achieved a great deal. We have proven that too many cooks do not spoil the broth; on the contrary: the Building Biology Standard and its Guideline Values improved and became more professional over the years thanks to many competent contributions and generous support. Thanks to all of you!

After so many years of joint work, we - the main responsible persons from Baubiologie Maes and the Institute of Building Biology and Sustainability IBN - are putting together a new Standard commission in 2017. Most well-known names will remain, others will be added, so Christian Blank, Dipl. Ing. Joachim Gertenbach, Bernd Kinze, Dipl. Ing. Friedbert Lohner, Dipl. Ing. Karlheinz Müller and Stephan Streil. What a team! It is our intention to continue the proven tradition of developing, updating and making it better.

Beyond the commission, the following is important to me: Suggestions and ideas by experienced colleagues and experts are always welcome. So many offer their competence and experience, each in his or her own way. There should not be a super commission who does everything and excludes others. The Building Biology Standard can and should be a joint project where everybody who has something to contribute can do so with joy. In this way, the Standard can be developed further through us and for us and for all.

SBM - Guiding thread, orientation aid

Today, 25 years later, the updated eighth revision has been released in May 2015 as the Standard of Building Biology Testing Methods SBM-2015 together with the Evaluation Guidelines for Sleeping Areas and the Testing Conditions, Instructions and Additions, which have been serving as an international benchmark for professional, holistic and independent environmental assessments of indoor spaces and their evaluation based on a critical and precautionary approach. The Guideline Values - the only ones of their kind worldwide - still refer exclusively to the sensitive and important long-term exposure time during sleep and relaxation.

The SBM-2015 edition, like its predecessors, consists of the three major categories A, B and C with currently 19 subcategories. The physical category A deals with fields, waves and radiation, the chemical category B with toxins, pollutants, odors and indoor air quality, and the microbiological category C with parasites called fungi and bacteria. Right from the start and to this day, the Standard and Guidelines have for the first time summarized the broad range of all homemade environmental stress factors from the inside and those acting from the outside, ranging from electrosmog, magnetic fields and radioactivity to geological disturbances through to sound and light, from gases and vapors to formaldehyde, solvents and other volatile compounds through to pesticides, plasticizers, flame retardants, PCBs, PAHs, heavy metals and other semivolatile compounds up to particulates and fibers, as well as the entire range of indoor climate factors including

molds and yeasts, bacteria and allergens.

The introduction of the Standard describes the goal: It is about risk factors in bedrooms, living spaces, workplaces and on properties that are measured, assessed and evaluated in an objective, scientific and expert manner and then the measuring results, measuring instruments and analysis methods are documented in an easy-to-understand written report. In case of abnormalities, relevant remediation concepts are developed and suggested to the client. The professional detection, minimization and avoidance of such stress factors within an individual's framework of possibility; this is what is at the heart of our testing. It is the goal to create a living environment that is as risk-free, exposure-free and natural as possible. As a rule - exceptions confirm the rule - all Standard subcategories should be taken into account and as many diagnostic options as possible should be combined to attribute the sources of abnormal exposure levels as accurately as possible and to meet the central tenet of Building Biology, that is, to take a holistic approach.

The Standard including the Guideline Values and Testing Conditions are based on the current experience and knowledge. In addition, critical scientific studies, other regulatory frameworks, limits and recommendations are also consulted for support evaluation.

Our Guideline Values continue to be divided into four exposure level ranges: no anomaly, slight anomaly, severe anomaly and extreme anomaly. No anomaly exposure levels provide a maximum degree of precaution and safety. They correspond to the unexposed natural conditions or the common and nearly inevitable background level of our modern living environment. Slight anomaly means: As a precaution and especially with regard to sensitive and ill people, remediation should be carried out whenever it is possible. Severe anomalies are no longer acceptable from a Building Biology point of view. Action is required. Remediation should be carried out soon. In addition to numerous case histories, scientific studies show biological effects and health problems. Extreme anomaly exposure levels call for immediate and rigorous action. In some instances, international safety limits, binding values and recommendations for public and occupational exposures may be reached or even exceeded.

And do not forget the overriding guiding principle: Any risk reduction is worth aiming at. Numbers are only meant to be a guide, no more, no less. And whenever possible and relevant: Nature is the ultimate standard.

The Standard and Guidelines are now being used as a basis and guide by colleagues and institutes throughout Germany and Europe, in North and South America, Australia, New Zealand, India and Japan, to name just a few. For environmental medicine, consumer associations, citizens' initiatives and anybody who would like to become healthy and stay healthy, it has become the indispensable companion for an individual, independent and safe approach to create a better indoor environment and - in general and as a whole - it has become a crucial piece of the puzzle for a better quality of life.

In comprehensive multi-day seminars, the Standard is filled with theoretical and practical life. It is here that the possibilities and limits of current Building Biology measuring are presented and discussed by experienced experts. Here the leading Building Biology Experts teach how to detect, diagnose, evaluate and remedy "sick" homes, workstations, sleeping areas, properties or materials and how to make them "healthy" again.

Also consult the presentations on the Building Biology Standard and its Guideline Values (the first one listed is available in German and English; the other four are available in German only):
- *"Fragen zum Standard und den Richtwerten" - Der neue SBM-2015*
- *"Questions on the Standard of Building Biology and the Guidelines" - The New SBM-2015*
- *"Standard der baubiologischen Messtechnik und seine Richtwerte" - Kurzvortrag [The Building Biology Standard and Its Guideline Values" - Short presentation]*
- *"SBM-2008 - 25 Jahre baubiologische Messtechnik" - Was gibt's Neues beim Standard? [SBM-2008 - 25 Years of Building Biology Testing Methods - What's New in the Standard?]*
- *"SBM-2015 - Nach 23 Jahren die 8. Aktualisierung" [SBM-2015 - After 23 Years Update No. 8]*
- *"Baubiologie - Umwelt fängt zu Hause an" [Building Biology - Environment Begins at Home]*

SBM - Benchmark, working basis, recognition

The German Building Biology Association (VB), founded in 2002, made the Standard with its Guidelines and Conditions to its working basis right from the outset. Many institutes at home and abroad use them as a basis for their measurements and evaluations such as: Institut für Baubiologie+Nachhaltigkeit IBN (Institute of Building Biology+Sustainability IBN) in Rosenheim (Germany), International Institute for Building Biology & Ecology IBE in Santa Fe (USA), Insituto Español de Baubiologie IEB in Oncins (Spain), Institut Francais de Baubiologie et d'Ecology IBEF in Strasbourg (France) or Baubiologie Institute of Japan BIJ in Maebashi (Japan). The complete Standard has been translated into English, Spanish, Italian, French and Japanese. International training courses and seminars have been based on the Standard for two decades, first and foremost the basic and advanced seminars on Building Biology Testing Methods by the German IBN Institute and additional practical, expert and advanced seminars and other courses from the Building Biology Association (VB) as well as other associations, institutes and experts. Some books and professional publications are based on the Standard.

Medical associations, health insurance companies and medical academies take our Guideline Values as a basis for their assessments. In 2012, the Austrian Medical Association (ÖAK), Austrian Chamber of Labor (AK) and the Austrian Workers' Compensation Board (AUVA) published a medical guideline on electromagnetic fields and recommended that the Building Biology Guidelines based on "measurements relevant in practice" are a good benchmark "for the assessment of regular exposures of more than four hours per day." The German Medical Association demanded lowering the regulatory exposure limits for electromagnetic fields by a ten-thousandth, thereby reaching the order of magnitude previously established by the Building Biology Guidelines. German health insurance companies such as AOK, Continentale and others informed their members about electrosmog, indoor toxins and mold in homes. In 2016, the European Academy for Environmental Medicine EUROPAEM points to our Guidelines for Sleeping Areas (referring to fields, waves and electrosmog), mostly adopting them, also for exposure times of "more than four hours per day" and modifying them for daytime exposures and lowering them further for "sensitive populations". The academy of environmental physicians basically calls for lowering the field strengths "as low as possible", just like we do.

The BioInitiative Working Group is a fusion of international scientists. Their recommended exposure limits for electromagnetic fields fall into a similar range as proposed by us many years earlier. Building Biology is also represented in the Kompetenzinitiative (Competence Initiative), an international, interdisciplinary and independent association of scientists, physicians, lawyers, technicians and experts who are committed to raising awareness about the critical consequences of electromagnetic field effects on humans, animals and nature. The Bund für Umwelt- und Naturschutz Deutschland BUND (Friends of the Earth Germany) makes our Guidelines, which had been released for the first time some years earlier, the basis of their recommendations "for the chronic exposure in sleeping and resting areas", requesting even slightly lower values.

With their demands for protection against long-term effects due to electromagnetic fields, the European Environment Agency EEA, publications of the European Parliament and the Council of Europe also fall within a similar range as the previously published Building Biology Guidelines. The world's largest scientific study by the US Environmental Protection Agency EPA, an 800-page mammoth report, confirms already in 1995 once again the correctness and relevance of our requirements. In 1996, the EPA makes recommendations to the U.S. Congress regarding exposure limits. In 2001, the World Health Organization WHO classifies ELF magnetic fields as "possibly carcinogenic to humans". The classification is based on effects observed in the "severe anomaly" exposure range of our Guidelines. In 2011, the WHO puts forward the same classification for radio-frequency electromagnetic fields emitted by cell phones and wireless communication technologies: "cancer risk". The Salzburg state government in Austria refers to our Standard including its Guidelines, recommending Building Biology Testing Specialists. The reference levels of the global TCO standard for low-EMF computer workstations are ten times higher than the Building Biology Guideline Values for sleeping areas; once again, another confirmation of the relevance of our lower recommendations for the more sensitive sleep and regeneration time.

The above-mentioned judgment by the German Federal Court of Justice almost sounds like a Building Biology decision: For concluding that wireless radiation technologies pose a risk practical experiences would be sufficient; they do not have to be proven by scientific research. The District Court of Freiburg in Germany announced in a ruling that "official regulations and exposure limits are not sufficient for a health assessment," and the court took guidance from our Guidelines. "For preventive health reasons, there has been a "stricter Standard of Building Biology Testing Methods available since 1992" that "is being consulted for a critical biological assessment of environmental exposures."

Öko-Test, the largest German consumer test magazine, and other such outlets in Europe use the Building Biology specifications for their evaluation of electrosmog. In 1992, Öko-Test brings Baubiologie Maes as their scientific consultants onboard its editorial staff, having used it as a test institute ever since.

Numerous international appeals from doctors, scientists and experts demand that which has been a long-standing concern for us as Building Biology Consultants, first and foremost the Freiburger Appell (Freiburg Appeal) and his successor the International Ärzteappell (International Doctors' Appeal); they have been and are still supported and signed by several thousand physicians and professionals. Environmental physicians, scientists, environmental associations, citizens' initiatives, environmental institutes, self-help activities, working groups, they all wrote a joint resolution based on the Guideline Values.

The Bundesverband Elektrosmog (Interdisciplinary Working Group for Minimizing Exposure to Electromagnetic Fields) and the Katalyse Institute in Cologne joined the effort. Based on their own EMF research and after evaluating the EMF research findings available worldwide, hundreds of internationally renowned and recognized scientists, especially those who are independent and critical, are calling to keep public exposure levels within a range that we have already proposed and published a long time ago. And once again, this emphasizes the increasing validation of our Guideline Values. Some cities, municipalities, districts and states or provinces do not want to subject their people to official regulations and have developed their own exposure limits for electromagnetic exposures, for example, for buildings near high-voltage transmission lines that are in the range of the tried and tested Building Biology Guideline Values.

Frequently, as mentioned earlier, it was the experience and creativity in Building Biology and to have the courage to raise issues that resulted in better protection of human health through more reasonable assessments and more compatible products. Manufacturers of measuring instruments, electric devices such as phones, baby monitors, LEDs, electrical accessories, demand/cut-off switches and so on; beds, mattresses, shielding and remediation strategies and so on; as well as specialty stores, natural building material suppliers, natural paint and flooring manufacturers, furniture manufacturers, interior designers, HVAC installers, electricians, plumbers, heating system installers, abatement specialists, tradespeople, service providers and so on as well as architects and planners use Building Biology recommendations. Manufactures of prefabricated houses and log homes and companies furnishing eco-friendly hotels do so likewise.

In many respects, we have been and are still ahead of our times with our concept. We have set standards, demonstrating what is important and right, preparing the way and achieving pioneering breakthroughs. Only later - sometimes much, much later - scientists, medical doctors, experts, associations, authorities, institutes come slowly, slowly to comparable findings and demands and thereby confirm the correctness and relevance of our recommendations.

Also consult these more comprehensive up-to-date summaries (in German):

- *"Wer bezieht und beruft sich auf den baubiologischen Standard? Wer bestätigt die Richtigkeit baubiologischer Maßstäbe? Wer bewertet nach baubiologischen Richtwerten? Wer kommt zu vergleichbaren Erkenntnissen? - Beispiele"*
  [Who Refers to the Building Biology Standard? Who Confirms the Correctness of Building Biology Benchmarks? Who Uses the Building Biology Guidelines for Evaluation? Who Comes to Comparable Findings? - Examples]
- *"Pionierleistungen der baubiologischen Messtechnik - Beispiele"*
  [Pioneering Achievements of the Building Biology Testing Methods - Examples]

From Germany to the United States

From the pioneering country Germany, the Building Biology movement spilled over into neighboring countries and also went overseas, from early on to the U.S., later also to other English-speaking countries such as Australia, New Zealand and Canada. In the U.S., I gave the first presentation about the Building Biology Testing Methods at an international conference of the World Research Foundation (WRF) in Los Angeles in 1990 (that time the Standard was being developed but had not yet been published): "Stress from Current and Radiation - The Sick Sleeping Room and its Successful Treatment." Besides the 750 physicians, naturopaths, scientists, health insurance representatives, architects and journalists, the architect Helmut Ziehe, who had established the International Institute for Bau-Biology & Ecology IBE in Florida in 1987 and as a student of Prof. Schneider offered the IBN correspondence course in English-speaking countries, also attended this conference. His institute was the only one of its kind in the U.S. and was still in its infancy: a handful, mostly in Germany trained consultants, no technical magazine, no society, no association, hardly any measuring instruments, certainly not very professional ones, not even demand or cut-off switches. We met after my presentation and set the course for the future of Building Biology in the United States, especially with regard to the Testing Methods that tended to lag behind the development in Europe. In the coming years, we were frequently seminar instructors and presenters at the IBE training courses. Today, there are more than 55 well-trained and certified colleagues over there who practice professional Building Biology Testing Methods and offer assessments for homes, bedrooms, workplaces or properties as well as consulting services. Here in Germany, there are currently twice as many.

Also consult the following presentations and articles (first two only in English, third in German):
- *"Stress from Current and Radiation - The Sick Bedroom and Its Successful Treatment"*
- *"Stress from Current and Radiation - Electromagnetic Fields and Geopathic Disturbances That Can Affect Homes, Sleeping Rooms and Testing Places in Practice-rooms"*
- *"Baubiologie in Amerika - Deutsche Baubiologen bilden in den USA aus"*
  [Building Biology in North America - German Building Biology Consultants Teach in the U.S.]

My patient: the bedroom

We already said so before: Whenever we measure, advise or remediate, the bedroom is the focus of our attention. Nowhere else do we spend more time than in the bedroom. Nowhere else do we stay longer and in the same place than here - for years, for decades. Nowhere else are body and mind more vulnerable than in the sensitive sleep phase. During sleep at night when humans regenerate, we are more much more vulnerable than during normal waking consciousness. At nighttime, the immune system, all autonomic processes and the ability to counteract environmental stress factors slow down and only operate at minimum capacity. At night we "digest" what we absorbed during the day and repair what was damaged. During sleep, the body detoxifies. During sleep, the body does not expect to be confronted with stress, stimuli, exposures and activity. Body and mind need quiet, rest and passivity. An undisturbed area for sleep is an important piece of a healthy life. An excellent sleeping area is also a prerequisite for a successful medical and naturopathic diagnosis and therapy.

As it has already been mentioned at the beginning, we have gained the most experience and also learned much from measuring the sleeping areas of mostly sick people. The many successful cases following an assessment of the sleeping area provided us with a solid foundation on which we could build our Testing Methods. They pointed us in the right direction. This caught on quickly, especially among physicians and naturopaths.

Dr. med. Joachim Mutter: "There is no way around a remediation of the bedroom based on Building Biology. This is an important part of any medical treatment. As a rule, all medical doctors should be concerned about this."

Dr. med. Dieter Aschoff: "First and foremost, it is the exposed bed, the disturbed sleeping area that makes people sick and keeps sick people sick and prevents healing.

Dr. med. Dietrich Klinghardt - a native of Freiburg (Germany), a physician with a private

clinic in Seattle, Washington, a leading expert in infectious diseases in the U.S. for 25 years, head of the Institute for Neurobiology - always speaks about Building Biology and electrosmog during sleep in his presentations and publications: "The most striking disease-causing effect of electromagnetic fields manifests itself at night, among others, through the interference with the melatonin production. The hormone melatonin is - in addition to many essential functions such as healthy sleep or especially cancer protection - the most important substance for the detoxification of toxins, specifically in the brain and nerves. It is the most important antagonist to environmental toxins, heavy metals and the toxins produced by bacteria, viruses and fungi. The mobile phone and other sources of electromagnetic fields in the bedroom prevent us from producing enough melatonin at night. The radiation blocks its production. This deadly circumstance is the main reason for the increase in neurological diseases. Furthermore, if people cannot have undisturbed sleep at night, the immune system cannot recover and be strengthened, either. Exposures at night have a key impact. At night, the parasympathetic system is dominant and the sympathetic system is switched off. In this state, we are increasingly vulnerable to such influences and defenseless. If we want to protect ourselves, it is not necessary to do so perfectly 24 hours a day, but mainly during sleep and regeneration. This is the most crucial time. At night, electromagnetic exposures are simply more harmful. An important medical step is the Building Biology Testing of the sleeping area."

The medical family Drs. med. Annemarie, Hans-Joachim and Christian Petersohn: "In Building Biology one can find a whole range of causes for diseases. For good reason, the bed of the patient is the center of any investigation into this matter. The bed is such a crucial place because we always spend long periods of time in this very place and our body and mind are most sensitive during sleep, which is restorative and repairing. A sick bed is a sure thing to ruin your health, Paracelsus said 500 years ago. A very sure thing."

The naturopath and book author Uwe Karstädt from Munich, too, speaks from experience: "If you regenerate well at night protected from the harmful exposure to electromagnetic fields, you can expect a huge boost to your health."

My team and I have carried out more than 10000 surveys of sleeping areas to date (after 30 years, we stopped counting), and we have witnessed again and again that a sleeping area mostly free or at least with very low exposure levels of physical, chemical, indoor air quality or microbiological stress factors is an essential part of a healthy and vital life. Even if the world around us goes crazy and the ever-increasing madness of life-threatening influences can hardly be stopped, we still have our own home where everyone can do, change and improve a great deal. We still have these two square meters of bed, the most important two square meters of our life which we alone are responsible for and which we often can transform into a completely or almost completely undisturbed space. Environment begins at home. Environmental risk factors are often more concentrated, more pronounced and - this is especially important - more chronic inside than outside the home. Inside the home, this is where the concept of Building Biology begins with its extraordinary and groundbreaking approach. Nothing compares to this.

After sleeping places, the areas where we regularly live and work during waking hours for long periods require our Building Biology attention. For work environments, there are legal regulations and (very often extremely high) exposure limits for some (probably not many) technical or toxic environmental factors, which do not or rarely apply to home environments, although this is the place where it would be even more important to have them. I don't get this: In our private lives, we are basically on our own to protect us and our family from the risks of electricity, radiation, toxins, fungi and more. There we have little legal backing, with very few exceptions.

There are no Building Biology Evaluation Guidelines for workplaces. There is an ongoing conversation to change that. Experts and associations are asked to step up to the challenge. Well, I am out of my depth here. I have too little experience with work environments. I know too few cases to be evaluated. It should not make much of a difference as to whether somebody is exposed to pesticides or fungi during the day or at night. So, I suppose, we could also adapt the Sleeping Area Guideline Values and principles for toxins, gases, pollutants, fungi and bacteria to daytime exposures. Furthermore, for work environments, we could refer to recommendations, guidelines and regulatory directive

we consider to be okay and that can serve as a good guide. In the case of electromagnetic fields, for example, there are the new guidelines 2017 by the European Academy for Environmental Medicine (EUROPAEM), the Austrian Medical Association (ÖÄK) (both are similar to ours for sleeping areas) and the TCO standard for low-EMF computer equipment, also those by the BioInitiative Working Group and the Bund Umwelt und Naturschutz Deutschland BUND (Friends of the Earth Germany). For radioactivity and radon, there is the Bundesamt für Strahlenschutz BfS (Federal Office for Radiation Protection). For pollutants and odors, the Arbeitsgemeinschaft ökologischer Forschungsinstitute AGÖF (Association of Ecological Research Institutes). For molds, the Umweltbundesamt UBA (German Federal Environmental Agency). In work environments and beyond, our basic principles apply: Any risk reduction is worth aiming at with a focus on achievability, even though there are certain challenges, responsibilities, accountabilities, factual constraints and more limited possibilities than in private living environments.

Electrosmog: Standard Category A

Every now and then, we are asked why, right from the start, electrosmog and the associated physical agents were placed at the very beginning of the Standard and not the key chemical, indoor climate or microbiological agents. The latter are much better known, explored and accepted, based on much more solid ground. The term electrosmog seems to set off some people. This terms is not scientific enough, they say. It may actually put one into a rather disadvantageous position. We cannot see, smell, taste or hear electrosmog and the body hardly ever issues warning signals. This makes electrosmog somewhat mysterious. And anyway, electrosmog is everywhere now. It is a fact of everyday life, and virtually everyone has a smartphone, a computer and Internet access and wants to be actively engaged in our modern, electricity-based, digital life. You cannot escape this reality anymore even if you wanted to. Back to living in a cave with candles?

No, not back to living in a cave. We want a modern life, but at the same time, we prefer to keep the risks and side effects as low as possible. This is possible, as shown by our recommendations. And: Electrosmog is not everywhere - even today, at least not at critical levels. Wherever electrosmog occurs at elevated levels, it can be reduced significantly in most cases, especially across the main two square meters called bed. Besides, hardly anything else has been as extensively researched as the effects of electromagnetic fields. The evocative findings, however, are hardly ever implemented by authorities or users because, besides mobile phones and the like being big business, this is already about a taboo with a potential for addiction: Everyone wants one. It doesn't matter how dangerous it is. And the official exposure limits are so high that there is hardly any place where they are ever reached. There is also nothing mysterious about electrosmog. It can be measured and evaluated on a scientific basis. Moreover, many risks we are exposed to are not perceived by our five senses and are nonetheless dangerous: magnetic fields, radioactivity, radon, poisons, heavy metals, asbestos, mold spores and so on. Yes, electrosmog is a terrible term, but it has been adopted into the language and everyone knows what it means. And scientists use it too. So do not let us be fussier than them.

Electrosmog as an easy-to-understand term for electric, magnetic and electromagnetic fields is used in the Standard, seminars, book titles or magazines. And not only there but also in other papers listing Building Biology topics, electrosmog is the top one - not merely by accident. Not because the Standard was too focused on electrosmog. All three main categories including all subcategories are equally important to make the Building Biology approach a holistic one that diagnoses a sick living and sleeping environment in a relevant manner and helps create a healthy one. Electrosmog measurements, in particular, are so useful because our concern - back then and today - about the ever increasing exposure levels of electromagnetic fields from the power grid and wireless technologies showcased the original, well-known and unique side of our Testing Methods right from the beginning. Across the entire Standard category A, we have accomplished the greatest pioneering achievements. Here, we uncovered problems, opened doors and set standards. Here, we attracted the greatest attention from specialists and the medical community. This caused a stir: first in Germany, soon thereafter internationally.

I like to recall our earlier days. Hard to believe: We had to explain to the head of the German Federal Office for Radiation Protection that a typical line-powered alarm clock

generates a stronger field at about one foot distance (where it stands on the bedside table) than a high-voltage transmission line. The public officials were not yet aware of this. They were actually surprised that such extremely high field sources could also be found at home, in our daily living environment. They were well informed about the fact that fields from high-voltage transmission lines are associated with health risks, including cancer. We demonstrated that cheap voltage testers or wiring locators from the hardware store start lighting up on our skin. Well, here we go again: field intensities like underneath high-voltage transmission lines. This time it is because people take a nap on commercially available heating pads or in electrically adjustable beds. We showed that compass needles rather pointed south instead of north on mattresses, reflecting how strongly the magnetic fields from the steel spring coils permeate the sleeper. Beyond the known field sources in beds, furnishings and building structures, we have also shown - almost in passing - strong and critical magnetic fields emitted by objects of everyday use that are worn on the body directly and constantly by countless people. For example, we warned about many headphones (also the small earbuds and most phone handsets), even eyeglass frames and metal-wired bras. With the simplest of measuring instruments, we identified static electricity on plastic surfaces as stress factors and indoor climate killers, also as a trigger for allergies caused by small synthetic stuffed animals in baby beds. We were tireless in our efforts to reveal, inform, and provoke, to publish, appear on television and radio, to inspire consumer and test magazines such as Öko-Test to take on those and other critical issues that concern millions and to incorporate all of them in their testing. These are only a few common examples from the early years. With regard to electrosmog and category A, we have set the ball rolling many times.

With growing curiosity, more experience, higher standards, greater courage and more precise measurement technologies, we were able to bring more and more things to light and to push the envelope regarding electrosmog and the whole category A of physical agents. We were the first ones who took detailed exposure measurements of mobile phones and published our results. Again, hard to believe: Telekom, Vodafone, authorities, scientists and even the mobile phone manufacturers were completely unaware and stumped because of the high readings. Readings that were - as was shown by research much later - staggeringly high above the threshold level of biological risk, and even after 20 years, this is still the truth. We criticized this absurdity. That new DECT cordless phones would constantly transmit and radiate for hundreds of meters, day and night - and that not only during use. It took well over ten years until the industry as well as authorities realized that this can be easily changed. From early on, we took objective measurements of the naturally occurring geomagnetic field and the radioactive radiation of the earth to bring more certainty to the detection of geological disturbances. We used highly sensitive measuring instruments for this purpose and had success. We have shown that a dangerously high level of radioactivity plus the accumulation of radon gas can sometimes quietly creep into a bedroom as a result of inconspicuous antiques, glazes and collector's items. A small cause with a huge, dangerous effect.

Later, the environmental factors of sound and light were added. In the case of sound, as mentioned earlier, it is often about very low frequency infrasound, which sometimes may drive one almost into madness, as well as very high frequency ultrasound. Twenty years ago, infrasound was a foreign word sneered at by experts like electrosmog twenty years prior. Today, infrasound levels are on the rise. Many people are suffering from these phenomena that are not immediately audible but cause unpleasant sensations. And people do not know why they suffer. Authorities and physicians do not take them seriously. The German Federal Environment Agency has finally begun to care about this issue.

In the case of light, we raised awareness and criticized the miserable influences of artificial lighting that can hardly, if at all, be perceived directly. We warned especially against compact fluorescent lamps - from the beginning in the 1990s - and suggested improvements, in particular, concerning the field emissions (often many times higher than permissible for computer screens), the annoying light flicker (although the eye is too slow to actually see it directly) and the unnatural, chopped up light spectrum (I call it "lightsmog") as well as components such as mercury and other toxins. Our former environmental minister and current vice-chancellor Sigmar Gabriel - in combination with the EU's desire to regulate everything - was the one who threw us this particular curve ball of stressful light. Sad, but we were forced to say goodbye to the healthy incandescent light bulb.

Exposures from electric, magnetic and electromagnetic fields and waves can be found especially frequently in buildings, sleeping areas, workplaces or on properties. So many areas are affected. Many more so than by any other Building Biology stress factor. And these exposure levels are rapidly increasing. There is no end in sight. Nothing in the last mere 20 years has seen such an explosive growth as electrosmog. When I look at the technical development of electrification and everything wireless, then it looks to me that we Building Biology Experts have our work cut out for us and that, now and in the future, we still are and will be in demand to measure, shield, inform, protect and improve. This is particularly true for RF radiation from wireless communication technologies most people - by their own choice and on an ongoing basis - expose themselves to through mobile phones or smartphones (the strongest RF radiation sources in everyday life, stronger than microwave ovens), whereby regarding the use of mobile devices as indispensable. The same applies to cordless phones, Wi-Fi networks or baby monitors (early practice). Not to mention new additions and further upgrades to cell sites on towers, masts and roofs (by now some hundreds of thousands in Germany alone) and the introduction of new technologies such as extra-high-voltage power supply, solar systems or wind turbines on the outside and more and more smart electronic devices on the inside. Home smart home.

There is one more thing that distinguishes electrosmog (and other physical phenomena included in category A such as geological disturbances or the "inaudible" infra- and ultrasound) from the pollutants, fungi and other risk factors included in categories B and C of the Standard: The joyful reactions of those who put their trust in us when we are able to take away the cause(s) of their suffering, namely by banishing, switching off, shielding, reducing or avoiding electromagnetic fields. These reactions occur with striking regularity, refreshingly clear and unexpectedly spontaneous. To achieve long-term, successful health outcomes, to end the most diverse symptoms and to improve sleep and quality of life does not happen by way of exception. These results are powerful. They make clients cheer and physicians take notice. The word gets out. The most exciting cases are those where many layers of technical electromagnetic fields and waves can be removed.

In indoor environments, other disease-causing factors and most pollutants do not lead to so many cases with such surprising results and quick aha! moments. One does not sleep better when there is less radioactivity, and a chronic bed wetter does not become dry again when there is less radon. This also applies to a few other environmental agents of the Standard: absolutely insidious and certainly causing disease, especially during long-term exposure, but the reactions immediately after remediation are either nonexistent or emerging only very slowly. Also: Even if, for example, radioactivity, radon, many toxins and gases, some fungi and bacteria, asbestos and other particulates are dangerous in the long term, even carcinogenic, and must therefore be kept at low levels, it is rare to find them at alarming levels in homes, but electrosmog is almost the rule.

Physicians and naturopaths confirm this observation, including the environmental physician Dr. Joachim Mutter: "Reducing electrosmog often brings relief relatively quickly - usually within hours or days. For allergy sufferers and those who have MCS, EHS or are otherwise very sensitive, in his experience, Building Biology improvements produce immediate effects. Sometimes the successful remediation of mold problems can also be noticed quickly. As for wood preservatives, heavy metals or other toxins, it takes longer until people will get better. These harmful substances are stored in the body, in adipose tissue on a long-term basis and need supportive toxin removal therapy."

We know: Electromagnetic fields have a destructive effect on cells, nerves, hormones, the brain, immune system, DNA, psyche, sleep. They cause stress, also oxidative stress. They cause blood cells to clump together. They reduce sperm quality and increase suicide risk. They cause or promote tumor growth and cancer. There is no doubt: All of the above and more have been confirmed by scientific studies. Sometimes electromagnetic fields seem to be the last drop that makes the barrel overflow, that brings the immune system to its knees, stretching it far beyond its limits. Electromagnetic fields are the door opener to many sensitivities and intolerances. How often could we experience that after the elimination or extreme reduction of electrostress, food intolerances would disappear? What does lactose have to do with the next-door neighbor's Wi-Fi router? That allergies dissolve. What have skin rashes or incessant coughing to do with fields from electrical

wiring and appliances? That MCS, a persistent excessive sensitivity to chemicals, becomes more stable. What does chemistry have to do with the base station of a cordless phone on the bedside table? That CFS, a vexing chronic fatigue disease, returns to normal. What has the addiction to sleep to do with the microwaves from mobile phone antennas nearby? That chronic infections only respond to treatment and get better after exposures to electrosmog have been reduced. What have smartphones or electric beds to do with persistent Lyme disease or a never-ending candida overgrowth? That weather sensitivities get better, concentration and memory improve, the wish for a child is finally fulfilled, therapy-resistant bed-wetting is gone from one day to the next, constant skin itching ends and night sweats as well, even anxiety vanishes, ADHD-fidgeting decreases without Ritalin, more histamine is tolerated again despite a histamine intolerance...

Electromagnetic fields trigger and maintain multisystem and autoimmune diseases and are the starting signals for promoting cancer growth. They lead to persistent resistance to therapy. After years of unsuccessful treatments, chronic diseases respond to medical treatment again after exposures to electromagnetic fields have been eliminated. And one more example of the many vicious circles of the previously mentioned intoxication or detoxification: Electrostress interferes with the body's detoxification systems so that the body can hardly rid itself off the toxins that have accumulated over time. At the same time, this form of stress, for example, significantly increases the release of toxic mercury from amalgam fillings. Furthermore, electrostress suppresses the production of the hormone melatonin and also hinders sleep. Like sleep, melatonin is very important for many body processes, especially detoxification and especially detoxification in the brain. Electrostress ensures that pathogenic microorganisms - such as bacteria and fungi - become even more pathogenic because they get more aggressive, producing more toxins than without electrostress. To make matters worse, cell phone radiation opens the blood-brain barrier, making it more permeable to those and other harmful substances and poisons, which certainly do not belong in the brain. The same electromagnetic fields and waves stand in the way of detoxification. Again, only a few of many possible examples.

Electrosmog cannot and must not be viewed in isolation. Interactions with many disease processes are possible. It triggers existing problems and awakens sleeping dogs. This is about unholy alliances. Electrosmog often is the trigger for a myriad of symptoms, even if not the (only) cause. All of this applies less so to chronically healthy people who (still) tolerate a lot; however, it does primarily apply to those who are suffering from many chronic diseases and sensitivities, who have a long medical history and who have to be very careful. It's often just this last drop.

What is also very attractive about category A, I think, is the fact that we have total control over our measurements. Nothing has to be left to others: starting with taking measurements on site with numerous measuring instruments for the many different tasks and finishing with evaluation, assessment and documentation. The results are immediately available and no waiting for laboratory work to be returned, as is often the case with indoor pollutants and molds. Building Biology Testing Specialists can show the client directly on site what is wrong and demonstrate the effects of various remediation strategies. They can "play" right then and there with different scenarios. This is fun and impressive.

All this and more is reason enough to position the electric, magnetic and electromagnetic fields at the top of the Building Biology Standard, and with them the whole category A. Measuring electrosmog and the other physical stress factors is what got the Standard started and what makes it unique. As for electrosmog, we have been involved from the very beginning - at home and the world over - and are still taking the lead. It is our domain. When taking a look at the long list of our pioneering achievements: Electrosmog is right at the top. If you take a look at the long list of those who refer to the Building Biology Guidelines and confirm their recommendations - in most cases, it is about electrosmog. If you take a look at the long list of the many and successful case histories; in the majority of cases, it is about electrosmog. And then there is the even larger number of inquiries, calls, mails and orders: Well, you already know.

Also consult these three more comprehensive lectures (first two in German only, last one both in German and English):
- *"Elektrosmog - nur Panikmache?"*

[Electrosmog - Only Scaremongering?]
- *"Mobilfunk - Elektrosmog frei Haus"*
  [Wireless Radiation - Electrosmog Delivered Free to the Your Door]
- *"Wissenschaft - wirklich?"- Gesundheitsrisiko Mobilfunkstrahlung, und nicht nur die: Wo bleibt die wissenschaftliche Anerkennung?*
- *"Science - Really?" - Health Risk Mobile Phone Radiation, and not only that: What about the Scientific Recognition?*

Indoor toxins and fungi: Standard Categories B and C

The risk factors of the categories B and C of the Building Biology Standard are at least as important, often even more dangerous. Among them: notorious disease- and cancer-causing agents. In category B, we have such dangerous substances as formaldehyde and other gases, hazardous solvents and air pollutants, dangerous pesticides, PCBs, PAHs, plasticizers, flame retardants and other poisons as well as toxic heavy metals such as mercury and lead, also asbestos that causes fatal pulmonary diseases. Also included are many aspects that ruin indoor climate and create thick air. In category C, we deal with increasing problems of molds, yeasts and bacteria that can make us sick, sometimes seriously ill, especially when the immune system is impaired. More and more people die due to antibiotic-resistant germs, not only in hospitals. From year to year, we are confronted with more and more mold assessments and consequently with more and more cases of fungal disease. After electric, magnetic and electromagnetic fields, molds, yeasts and other microorganisms (as a result of moisture damage and hygiene problems) are by now already taking second place on the toxin "hit list" of Building Biology risk factors. Some think, they have already advanced to first place.

As for the chemical agents in category B, we adopted more of what had already been common and proven. We added our Building Biology touch by further adapting, refining, partially improving and integrating them into our everyday life, but we were not the first - honor to whom honor is due. There were scientists, institutes, authorities, laboratories, consulting offices that had already brought light into the darkness before us, developed investigation strategies, published guideline values and carried out measurements. Measuring and sampling devices did not have to be newly built to meet our needs and standards. They were already available, and we could easily use them. Detailed evaluations and guideline values were also available, for example, from the Arbeitsgemeinschaft Ökologischer Forschungsinstitute AGÖF (Association of Ecological Research Institutes). They solidly reflect real-life exposure levels in a detailed manner. We very much appreciate their efforts. Concerning indoor toxins, there always have been and still are many competitors there, including colleagues, environmental analysts, environmental ambulances, specialists, universities, TÜVs... This makes category B appear more solid, here we are more in line with official agencies, offices and universities, so to speak, on the same page. So what we can offer in this area, many other professionals can do just as well. This does not make us so original and groundbreaking in this field.

So, in category B, there are fewer typical Building Biology activities that are pioneering. We were able to add some aspects based on our practical experience and slightly adapted existing guidelines to our needs accordingly. As for heavy metals, we have from early on called attention to the fact that the toxic mercury and/or arsenic detected by environmentalists in the patient's blood or urine does not always just originate from amalgam fillings or the wider environment finding its way into the body, but much more often high exposures occur due to the frequent consumption of seafood or edible mushrooms, also after the breakage of compact fluorescent lamps. As for particulate matter, we shared our first insights into the difficult topic of fogging - these sooty deposits on surfaces - as early as 1988, long before the authorities. And we challenged and disproved the then-claims that plasticizers, other pollutants, plastics or fungi would be the reason for that fogging. Over time we found out that rather the newer, with nanotechnology enhanced paints, coatings and building materials are contributing to or are even the main cause of fogging, which has not been officially confirmed yet.

As for indoor climate, it was important to us to include carbon dioxide, air ions, air electricity and air movement in the Building Biology Standard and thus to emphasis the importance of such investigations, which have rarely or never been carried out by others.

In unventilated and non-air-conditioned rooms - really bad in bedrooms and classrooms - carbon dioxide levels rise to unexpectedly high concentrations only after a short time due to exhalation alone. This means: goodbye to concentration and well-being, welcome to headache, fatigue and exhaustion. Essential components of a healthy indoor climate include high levels of balanced air ions similar to natural levels and an indoor air electricity level similar to the outdoors. Indoor climate conditions quickly take a nosedive when there is a lack of ventilation, electric fields, electrostatic surfaces, dry air and too much fine dust. In other words, an "artificial thunderstorm" is brewing within your own four walls: stressful climate, insufficient supplies, disturbed oxygen utilization and thick air. Slight air movements, hardly perceptible, especially when cool, yet they can cause tension and trigger headaches. For all these indoor climate parameters, there are special, direct-reading measuring instruments available, just as for electromagnetic fields, waves and radioactivity.

Also consult this more comprehensive lecture (in German):
- *"Wohngifte - dicke Luft in Innenräumen*
  [Indoor Toxins - Thick Air in Interior Spaces]

As for category C, which covers fungi and bacteria, similar notions as described above for category B apply. There were already well-known and tried-and-tested methods available we could use as a foundation and kept building on. We have adopted quite a bit from the United States; in the early days, they were more advanced than us in this field. There were sampling devices and test procedures as well as colleagues, experts and institutes who did mold testing, if only a few. We were on equal footing with official and established experts and contributed to the knowledge base, inspired, made many of our own practical experiences that led to groundbreaking findings. For some microbiology aspects, we were also the first, made our mark, introduced new suggestions and strategies, especially with respect to our Guideline Values and Testing Conditions.

As for molds, the Landesgesundheitsamt in Stuttgart LGA (Public Health Department of Baden-Württemberg), for example, considered our then available ideas, practice-based Guideline Values and innovative remediation procedures and expanded, supplemented, refined and detailed them with our cooperation - especially with input from the Berufsverband Deutscher Baubiologen VDB (German Association of Building Biology Professionals). The first LGA publication of the nationwide (and far beyond) respected guideline "Schimmelpilze in Innenräumen - Nachweis, Bewertung, Qualitätsmanagement" (Molds in Indoor Spaces - Detection, Assessment, Quality Management) was released in 2001. The Umweltbundesamt UBA (German Federal Environment Agency) built on the LGA publication and issued the "Schimmelpilz-Leitfaden" (Mold Guideline) and "Schimmelpilzsanierungs-Leitfaden" (Mold Remediation Guideline). Today, both publications are regarded as professional standards for microbiological investigations, evaluations and remediation. These two guidelines are currently being revised by the UBA and will be released as one publication. In addition to our own experiences, ideas and guiding principles, we also use these related UBA guidelines in our work. This is an example (albeit a rather rare one) for the successful hand-in-hand cooperation between Building Biology Experts and official agencies.

We sounded a note of caution and demonstrated that it is not enough to only remove the visible fungal growth, but that the many invisible and especially health-relevant fungal spores also have to be removed for a successful remediation. We criticized the then almost exclusive practice of environmental institutes and official agencies to take only air samples for mold measurements as far too one-sided and as revealing too little information; in contrast, we favored a reasonable, situation-specific combination of different examination methods: comparison between inside and outside air, house dust, surfaces, materials, cavities, visible fungal growth, hidden fungal spores, cultural and microscopic fungal metabolites such as MVOC and mycotoxins and so on. We developed a culture medium to specifically meet our needs: Building Biology Agar (YM aniline blue). In collaboration with physicians and naturopaths, we identified that molds or yeasts were not always found in the home or living environment of patients who had elevated fungal results in medical blood or allergy tests, but rather in their food, in particular, in herbal teas, cereals, nuts, muesli and smoothies and, in particular, critical species such as Aspergillus or Candida. Ever since, testing of regularly consumed favorite foods and

drinks belongs to the range of Building Biology Testing Methods.

In the case of mold remediation, we now favor purely mechanical methods with no side effects, and we said goodbye to the otherwise almost exclusively used toxic substances. We did not mean to replace one evil with another. We have shown that a successful mold remediation is possible after the removal of the moisture cause(s) and dehumidification of the affected rooms in combination with a careful removal of the fungal growth (please do not use a wire brush or cover it up with fungicide sprays or paints), suitable vacuum equipment, special air filtration, thorough surface cleaning, heat, flaming, hot steam, microwave treatment and so on.

We pulled yeasts out of their shadow existence. Assessments to date hardly ever, if at all, would look for yeasts. It was assumed that persistent and symptom-rich yeast infections were transmitted by contagion, overlooking the fact that these tormentors and pathogens also reside in our homes, sometimes in large amounts, and that this plentiful and permanent supply constantly re-exposes the occupants and cultures the disease. They nearly never occur where molds preferably establish themselves after construction and moisture problems, certainly not or only in rare cases in the indoor air.

We searched and found pathogenic yeasts - often Candida species - in kitchens, baths, toilets and other personal hygiene areas. Particularly popular with yeasts: refrigerator, dishwasher, washing machine, toilets, water filter, air humidifier, shower head, drains, baby bottle, yoghurt maker, oral irrigator, inhaler, toothbrush, organic waste bin and so on. In sponges and tea towels, there are sometimes massive amounts of yeasts, which then are wiped on plates and counters.

A whole-grain muesli soaked overnight can become a true incubator for these and other microorganisms. Sprouting equipment and dishes, e.g. for soy or cress, basically attract fungi. Pathogenic yeasts can be found in high numbers and surprisingly frequently in food. This a food safety scandal, especially sliced food at open food bars: sausage, cheese and so on, also pickled food from open bowls and barrels.

All that is reason enough for us to search for too many and too critical yeasts in houses, in food areas, to pay attention to them and give them their own Standard subcategory. Only by stopping the never ending supplies of the yeasts a medical therapy against them can become successful.

Also consult this more comprehensive lecture (in German):
- *"Pilze - unerwünschte Mitbewohner"*
  [Mold, Mildew and Yeasts - Unwanted Roommates]

We had realized from early on that we needed to pay more attention to bacteria, which as a rule tend to receive almost no attention, but that they can occur at frighteningly high numbers with moisture and hygiene problems and can seriously damage the people living there, sometimes even more so than mold can do. Bacteria show up in large quantities preferably where there is moisture, organic materials, putrefaction, spoilage, feces, also where yeasts feel great and multiply explosively (see above), sometimes hand in hand with molds. Pathogenic, dangerous bacteria in high numbers, we find them after water or (even worse) sewage damage, both in the contaminated building materials and furnishings as well as in the air of the affected houses.

Sometimes it is the water installation that accommodates too many bacteria and forms so-called biofilms, which consist of layers in which germs of different species take their lodgings and become resistant to disinfecting agents. It is really bad luck when the tap water or water filters harbor many critical bacteria and one drinks this contaminated water. It is quite a disaster when this contaminated water is used to moisten the air with humidifiers or clean the floors, then the bacteria are spread everywhere in the air, on beds, carpets, upholstery, furniture, books... The ultimate disaster strikes when wall paints conk out and become contaminated with bacteria. Be careful with water coolers at clinics, waiting rooms, offices, fitness studios as well as with decorative fountains or air humidifiers. Let us repeat: Commercially available or homegrown sprouts are true bacteria havens, including dangerous ones. Caution with legionella in shower water.

Cell phones and smartphones can also turn into a bacteria magnet, simply don't share yours. And cell phone radiation, as we do know now, makes microorganisms more active, increases toxin production, makes the blood-brain barrier more permeable so that toxins, also bacterial toxins, more easily enter the brain.

The worst-case scenario: aggressive, resistant bacteria that can lead to illness and even death, for example, in hospitals. Alone in Germany, there are 40 000 deaths annually because of nontreatable hospital germs.

Sometimes it is the biotope called bed. We sweat at least half a liter at night, raise the temperature of the warm and damp bed to a range that makes bacteria and fungi very happy and leave behind one to two grams of skin scales and thereby invite dust mites. That amounts to 200 liters of sweat per year plus a pound of dandruff plus an extra portion of house dust mites and their excrements plus zillions of bacteria and fungi. Bacteria and fungi, skin scales, dust mites and warm moisture are best friends, an unholy alliance. Does this sound familiar? Mattress not cleaned for months or even years? Never turned it over, exposed it to sunlight or aired it out? In some cases, we helped people to have less allergies and sleep better just by replacing their heavily contaminated pillow.

All of this is reason enough to give bacteria the attention they deserve and to give them their very own subcategory in the Standard, too. Be aware that in the case of mold investigations, especially after extensive water and hygiene damage, the invisible bacteria also have to be investigated. Sometimes they are even the worse problem.

Standard ABC

Countless times we have been doubted and even laughed at. Especially from the industry, authorities, scientists, and sometimes also from average newspaper readers who feel they know enough already. This started early with electrosmog and other factors of category A. Most of all with terrestrial radiation, geological disturbances ("Do you believe in that?"). Before Chernobyl, there was much doubt about radioactivity; afterwards, all of a sudden there was no more since the official agencies needed our help because they did not have enough Geiger counters to go around and not enough know-how. Later, infrasound and vibrations ("Cannot hear that at all.") and flickering light ("Cannot see that at all.") caused people to raise their eyebrows. Now and then, I had this feeling that, if nobody doubted us, we had done something wrong.

This was also the case with category C, for example, when we determined that yeast and bacteria problems occur in the household and in food and raised awareness about it. Years later, you could see, hear and read about it in the media. Agencies, universities, microbiologists and public health hygienists have reviewed and confirmed it. As so often. Yes, a kitchen sponge can actually be extremely contaminated with microbes as do refrigerators, dishwashers, washing machines, water filters, sprouting equipment and so on, even worse than toilet seats at highway rest areas. Extra caution is warranted. Then there are those "experts" again, suggesting that we civilized people would be way too clean, so our immune system would be bored, would have too little to do, would not be challenged enough and thus would go crazy because of misdirected activities and would shoot itself in the foot. Therefore, stress would be welcome to make us tougher, the perfect survival training. We do not have to believe everything.

About the more established risk factors of the Categories B and C of the Building Biology Standard, the classical pollutants such as solvents, wood preservatives, PCBs, mercury or asbestos, usually also including mold, people are already much better informed. There is a greater conflict awareness among the public. In those cases, everybody knows that it can be dangerous. Scientists, public health officials and Building Biology Consultants agree for once. Even if there is still a big tussle about exposure limits. Even if it took far too many decades and far too many who became sick and died because of asbestos and PCP and PCB and many other dangerous chemicals and particulates before we have finally adopted a science-based awareness of the associated risks today. Even if today there are thousands of different chemical substances and mixtures and new ones are added daily, but only a chosen few are actually assessed, to say nothing of any exposure limits for the public or indoor environments at home.

So all categories and all subcategories of the Building Biology Standard are, as you know already, important in their own right. Depending on the situation, they make more or less sense for clients, patients, treating physicians and Building Biology Testing Specialists. They are more or less challenging or fascinating and have their advantages and disadvantages. Always keep in mind: Each Standard point is equally important and is part of holistic services. Sometimes it is just this one point not requested by the client or not taken seriously enough by us that may turn out to be the decisive factor and that bothers the affected person the most. In my experience, only one example, the myriad of symptoms caused by electromagnetic fields can be quite similar to infrasound. It is too bad then when you cannot find anything out of the ordinary with electrosmog and overlook infrasound or vice versa. The same goes for odors: Some bacterial odors can easily be confused with chemical outgassing. Or: A scratchy throat is ascribed to mold, but it may actually be due to dry air and/or too much dust.

A holistic approach at all cost may not always be what is needed and appropriate. Two examples: Sometimes the treating physician only wants to know a certain detail as to whether the abnormal fungal levels found in an allergy test or the mercury found in the urine can be detected in the living environment of the patient or originates rather from the diet or the dental fillings. Sometimes the client's wish list only includes one specific aspect, for example, a radio station, substation or railway line very close to a potential property, and the desire to purchase it may already be extinguished by the time the first measurement has been taken. Stay flexible, relevant and proceed with a clear understanding of the specific situation.

This small disadvantage has already been addressed before: In the case of indoor toxins and fungi, despite all their importance, successful health outcomes are not noticed as often, obvious and fast compared to exposures of physical stress factors. Another small drawback: With regard to categories B and C, we Building Biology Testing Specialists often only do that part of the work - namely the sampling of air, dust or materials on site - which clients to a certain extent could sometimes do by themselves. The second exciting part, the actual analysis and evaluation, is missed by the client and us because this is mostly done behind the doors of analytical labs with whom we work together. That means: waiting for the results. And one more thing: Testing for agents in categories B and C are sometimes (really only sometimes) paid by health insurance companies and other insurance companies; however, testing for category A certainly not, unfortunately.

Wishes for the future and a bit of concern

What worries me a little bit? It had and has not always been easy to uphold this concept. There are many, most of them, who love the uniqueness and special features of the Building Biology Testing Methods, but there also some who do not really appreciate them, feel uneasy about them or may even be somewhat frightened by them. Some wish to have more security by the universally acknowledged sciences. Some wish to be more established, accepted, presentable, more in line with the trends of our time (no matter how questionable they may be). Some prefer a rigid structure, certifications and stamps, more recognition from authorities, societies, associations and the media. Some keep an eye on a faster, more promising and profitable business, where their own ego and their own advantage are too paramount. They may then be willing to make compromises, for example, by cozying up to a more industry and government friendly view than our tried-and-tested Building Biology Guideline Values and by softening the traditional Building Biology objectives. The price exacted for this kind of cozying up translates into moving away from doing pioneering work, seeking originality, maintaining independence, being unrestrained and accountable, and also from the real satisfaction and joy experienced when doing something with heart and out of conviction.

Let's take a look at the Building Biology Guideline Values and RF radiation. I hear some people say that the times have changed and we have to adjust, especially the Guideline Values. The times have truly changed, but unfortunately not the individual biological sensitivity. Humans cannot adapt to the explosion of wireless madness just like that, by making bad compromises and raising guide values. This is not a solution. Even though today there are thousands of times more cell sites and millions of times more cell phones, cordless phones and Wi-Fi routers than 20 years ago, and we therefore find fewer low-

EMF living environments and sleeping areas, affected people have not become less sensitive or more hardened and their body's defenses have not become more strengthened. Even though it is no longer only about a minority but the majority, the personal exposure has not decreased. Our Guideline Values are not fixed ideas. We did not play dice. They were well thought out by experts and are based on biological effects, stress levels, that is, based on the risk, not the trends of our time. Raising our Guidelines would, among other things, disregard the growing needs of those who are sensitive. In the case of electrosensitive persons, the guideline range of "no anomaly" to "slight anomaly" reflects them. We cannot suddenly go with the flow regarding conditions we ourselves have exposed as being critical after many years of observation and out of conviction. We cannot give an all-clear signal now by raising our Values and sweeping the existing risk under the carpet? Anyone who would want this has not fully understood Building Biology. The adjustment of exposure limits we leave to the politicians who have shown often enough where this usually leads. Rather we should clearly state that electrostress indoors and outdoors keeps rising to threatening levels and the threat to human health and all of nature also keeps rising in the process.

We are still committed to striving for achievability and to make the best of a given situation, even if desirable optimum levels regarding wireless radiation are less often and more difficult to achieve. Then we will have to look the consequences in the eyes that, from a Building Biology perspective, anomalies are increasingly more common. This is the reality now. We are not spin doctors or float with the tides. With our knowledge, our experiences, ideas and visions, maybe we are some starry-eyed idealists who would like to make a positive difference. We can at least offer a great deal of information and strategies that help people to act on their own responsibility and minimize or eliminate this risk (and many others) within their own living spaces and sleeping areas, which is where it counts the most and - like said before - is often very possible to implement.

Anyhow, there is no need to be so cautious and hesitant, so uncertain or even anxious, ducking and dodging just because others see and do things differently. We do not have to be compliant with VDE, VDI or TÜV. There is no need to suspect a lawyer behind every client. Our benchmark is not what insurances are willing to pay for. Why being so impressed by back-breaking exposure limits and academic titles? We are free to question and investigate that which is ignored by the authorities. We are free to say that something is unhealthy even if health authorities consider it healthy, to call something out as irresponsible even if politicians vouch for it. Our experience does not have to be backed scientifically in every single detail. We can act with confidence and pride. We have courage and go for it. We have what it takes. We have a lot to offer, much more than many others. And we provide a decent service. We should not be so focused on being approved by others, but rather if we can ratify and approve others. Cheer up!

What I wish? That my Building Biology colleagues, associations and institutes, including all their members, continue to do fundamental work, tackle hot irons, do experiments and go on helping and informing interested and affected people and also drawing attention to their work and our concepts in public. They could and should address open questions. What have dying forests to do with wireless radiation? We have the measuring instruments to find out and could answer this question. How strong are electromagnetic fields in electric cars? What do we say to the latest fads coming from the U.S. such as harmonic filters or earthing? What to induction stoves? To robot lawn mowers? Where is the protest against wireless routers that radiate nonstop even when not being used, covering the entire neighborhood in the process? Where is the protest when the Ministry of Education is investing five billion euros in furnishing 40 000 schools with Wi-Fi networks, and the churches are planning to install thousands of new Wi-Fi hotspots? How often does a smartphone emit wireless radiation, even when no phone call is placed? And is it enough to activate the flight mode to stop the wireless emissions? The latest hearing aids radiate from ear to ear: electrosmog in the brain? How can we consolidate our existing knowledge and expand the measuring procedures for terrestrial radiation and geological fault zones? What does the manufacturer's statement "free from active fogging substances" for paints and surface treatments mean? Which substances activate fogging? Everyday questions that concern millions. Again, just a few examples.

I hope that the longstanding tradition of the Building Biology Testing Methods, which

have been established and proven themselves over three decades, can be continued with great joy and success also in the coming decades. That they can mature even further, following the essential foundations discussed here and that we can continue on our groundbreaking and self-sufficient path full of curiosity and creativity. That we not only look for well-trodden and safe paths, but that we continue to keep looking for true challenges and keep our heart open for those with special needs for protection. That we bring up painful issues and offer healing. That we do not get lost in the swamp of authorities, paragraphs, exposure limits and directives.

I express these wishes also in the name, respectful memory and with many thanks to my friend and colleague Helmut Merkel, who has worked so hard for our common goal and has gone from us so early. He has lived Building Biology with his whole heart, mind and gut instinct, as also has Prof. Dr. Anton Schneider, a shining example and source of inspiration to all of us. Hats off to these and other pioneers, including Ing. Erich W. Fischer who laid the foundations for electrosmog in Building Biology before the idea of a Standard had even been born.

I hope that this precious legacy will be appreciated and maintained in the future: These traditional Building Biology Testing Methods with their Guideline Values and Testing Conditions that proceed in a holistic manner, aim at what is feasible, take precautions, are based on practical experience and supported by scientific knowledge. Building Biology goes after the causes and does not content itself with only fighting symptoms. Building Biology is independent, easy to understand and human, while being original and leaving its mark. To maintain and to further cultivate these treasures is near and dear to my heart.

It has always been my wish that several strong pillars would hold the common roof of the Building Biology Testing Methods based on our guide and golden thread - the Standard. And yet these individual pillars - like the IBN, the associations VB and VDB, we from Baubiologie Maes and other institutes and experienced colleagues here and worldwide - can indeed be individual and different. None of the pillars should stand in the shadow of any of the others. We should support, inspire, complement and respect each other, not compete or interfere with each other. For we all share the one common goal: a healthier living environment.

The former German Federal President Johannes Rau, who, by the way, held Building Biology in high regard, said: "We should not mislead our children to believe that the world is safe. It is not. But we should awaken in them the confidence that the world can be healed." For me, Building Biology is a large part of this confidence.

If you want to change something, launch something new and shape the future, it is good to know the past, the history and development up to this point so that you are able to see, understand and appreciate what has been successful and tried and tested in the past. Looking back sharpens the view for the presence. This is one of the reasons for this contribution.

Also consult the Standard SBM-2015 with its Guidelines and Conditions (in German and English):
- *"Standard der baubiologischen Messtechnik" - SBM-2015*
- *"Standard of Building Biology Testing Methods" - SBM-2015*
- *"Baubiologische Richtwerte für Schlafbereiche" zum SBM-2015*
- *"Building Biology Evaluation Guidelines for Sleeping Areas" for SBM-2015*
- *"Messtechnische Randbedingungen, Erläuterungen und Ergänzungen" zum SBM-2015*
- *"Building Biology Testing Conditions, Instructions and Additions" for SBM-2015*

...and the book (only in German):
- *"Stress durch Strom und Strahlung" von W. Maes (ISBN 978-3-923531-26-4, 1111 Seiten) [Stress from Current and Radiation by W. Maes, 1111 pages]*

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