

Building Biology: the science and art of creating healthy built environments

The History of Building Biology

Building Biology originated in Germany in the 70's after the increase of rapidly built homes to accommodate the growing population resulted in the increase of various illnesses. It was discovered air pollutants or off-gassing of volatile organic compounds (VOCs) released into the air from building materials and finishes, the impact of electromagnetic energy fields (EMF) and mould caused by moisture build-up indoors or water damage contributed to and increased health problems.

The German term Bau-Biologie comes from *bau* meaning building, construction or structure and the living environment, *bios* meaning all forms of life, and *logos* implying a sense of order.

The Institute of Building Biology + Sustainability IBN in Germany was founded by Prof. Dr. Anton Schneider (1931-2015). Architect Helmut Ziehe, Dipl.Ing., graduate of the original Baubiologie training expanded the training, first to the USA and now training exists all around the world.

Building Biology in Australia is taught at the Australian College of Environmental Studies, founded by Nicole Bijlama, ND, BHScAc(Hons), Adv.Dip Building Biology (USA).

An overview of Building Biology from Wikipedia:

Building biology (or **Baubiologie**) is a field of building science investigating the indoor living environment for a variety of irritants. It is considered to lead the way in the field of a holistic home environment, offering a systematic trustworthy approach making homes and offices safe and healthy^[1]. Practitioners study how the environment of residential, commercial and public buildings can affect the health of the occupants, producing a restful or stressful environment. Important areas of building biology are building materials and processes, electromagnetic fields (EMFs) and radiation (EMR) and indoor air quality (IAQ). A German medical doctor Hubert Palm has been considered the 'father' of *Baubiologie*, but did attract controversy over his view of steel framed and concrete buildings.

The [Building Biology Institute \(BBI\)](#) and the [Institute of Building Biology and Sustainability \(IBN\)](#), follow 25 principles which govern the decision making of building biologists. These principles are broadly grouped into the following categories by the BBI:

- Site and Community Design,
- Occupant Health and Well-Being,
- Natural and Man-Made Electromagnetic Radiation Safety, and Environmental Protection,
- Social Responsibility and Energy Efficiency.

The IBN uses the following five categories in guiding the creation of healthy, environmentally sustainable and community-connected buildings:

- Healthy Indoor Air,
- Thermal and Acoustic Comfort,
- Human-Based Design,
- Sustainable Environmental Performance, and
- Socially Connected and Ecologically Sound Communities.

Building Biology deals with the impact the built environment has on human and environmental health. It focuses on a holistic approach to sustainability and liveability to produce a naturally healthier way to live while reducing our ecological and environmental footprint.

Materials are selected for multiple benefits, including health and the design of living environments, are considered for their ecological, economic, and social impact.

The 25 Principles Guiding Building Design and Construction

HEALTHY INDOOR AIR

1. Supply fresh air; reduce air pollutants and irritants
2. Eliminate dust, allergens, and toxic organisms (mould, yeast, and bacteria)
3. Build with materials having a pleasant or neutral smell
4. Minimize exposure to outside sources of electromagnetic fields and radio frequency radiation
5. Build with natural, nontoxic materials that have low radioactivity

THERMAL AND ACOUSTIC COMFORT

1. Balance thermal insulation and heat retention to control indoor surface and air temperatures
2. Build with hygroscopic or humidity-buffering materials
3. Minimize the moisture content of new construction or dry any wet materials
4. Use passive solar heating strategies or thermal radiation for heating when possible
5. Optimize room acoustics to control noise and vibrations

HUMAN-BASED DESIGN

1. Design with an eye to harmonic measure, proportion and form
2. Create spaces that foster the use of the senses (sight, sound, smell, and touch, specifically)
3. Maximize natural light and keep any illumination sources free of flickering or unnatural colours
4. Design both interior spaces and furniture for physiological and ergonomic health
5. Promote local building traditions and craftsmanship

SUSTAINABLE ENVIRONMENTAL PERFORMANCE

1. Minimize energy consumption in construction and building occupancy by using energy-efficient design and renewable energy
2. Avoid causing environmental harm through the use of sustainably-sourced materials
3. Consider the environmental impact on plants and animals when constructing by minimizing use of natural resources
4. Choose materials with the lowest environmental impact over the course of the building occupancy, favouring locally sourced and sustainably harvested building materials
5. Assure quality of drinking water is superior, using purification technology if necessary

SOCIALLY CONNECTED AND ECOLOGICALLY SOUND COMMUNITIES

1. Design the surrounding community for well-balanced mixed use (i.e., short distances between homes, work, shopping areas, schools, essential services, and recreation)
2. Create a community that meets human needs and promotes environmental protection
3. Make green space accessible to residents in rural, suburban, and urban areas
4. Strengthen regional and local supply networks as well as self-sufficiency
5. Build far from potential sources of contamination, radiation, pollutants, and noise

Please refer to:

https://en.wikipedia.org/wiki/Building_biology for links to further information.

<https://www.baubiologie.de/downloads/building-biology-guidelines-english.pdf>. The IBN GUIDELINES: Supplement to the Standard of Building Biology Testing Methods SBM-2008 (original version). Superseded by the SBM-2015.

<https://buildingbiology.com/site/downloads/standard-2015-englisch.pdf>

BUILDING BIOLOGY EVALUATION GUIDELINES – For Sleeping Areas states:

The BB evaluation guidelines are based on the precautionary principle. They are specifically designed for sleeping areas associated with long-term risks and a most sensitive window of opportunity for regeneration.

<https://www.aces.edu.au/> Australian College of Environmental Studies, Melbourne

Why does the environment affect our health and well-being?

1. We spend most of our time indoors. For many people it can be up to 90% of the day.
2. Stressors on the body induce an immune response. Stress initiates the fight or flight response and reduces the body's immunological functions. The immune system is designed to renew and rejuvenate however when the fight or flight response is activated it shuts down the rejuvenation system. A simple explanation of why chronic disease has increased in modern times is that the body is continually under stress or

attack by outside forces. The environment can make people sick. A definition of a chronic disease is one that is long lasting for three months or more (US Centre for Health Statistics). According to [Medicine Net](#), chronic diseases cannot be cured by vaccines or medication. An example is the effect of EMF on the body, causing multiple adverse health effects. The solution is not found in a medication, the solution is found in reducing exposure. Diagnosing electrical sensitivity, electrical hypersensitivity and chemical sensitivity is critical for those not getting relief from medications.

3. Reducing environmental stressors reduces inflammation in the body and when the body's is housed in a natural, non-toxic environment, including a psychological non-toxic environment it heals naturally, as Nature intended. This means the building environment and the human environment make a difference to health and well-being, especially for those affected by toxic environmental exposures.
4. The environment in which we sleep is the most important because as we sleep the body rejuvenates and repairs cells. Sleep plays a vital role in health and well-being. According to the [National Institute of Health](#), sleep deficiency and sleep deprivation can cause chronic health problems and effect how well you function, think, learn, work and get along with others.