

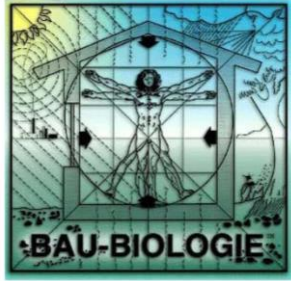
International Institute for  
Bau-biologie® & Ecology

IBE 205.2

## IBE 205.2 Building Overview



**BRINGING TOGETHER TECHNOLOGY AND DESIGN  
METHODS TO PROVIDE THE INFORMATION  
NEEDED TO CREATE HEALTHY HOMES AND  
WORKPLACES**



## Building Materials Overview – IBE 205.2

### Welcome

*Thank you for choosing IBE for your educational needs. Current environmental realities demand a new approach to ensuring that our homes, schools and office buildings support the health and wellness of all who dwell there. We strive to provide the latest information and cutting edge methodology on the vital, complex relationship between the natural and the built environments. May you find your educational experiences enlightening, and take this knowledge out into your community for the benefit of all. **Michael Conn**, Executive Director, Institute for Bau-Biologie & Ecology.*

### Course Navigation

You will find that it is very easy to navigate through this course.

- Progress through the lessons using intuitive navigation tools. When you study, make sure to be aware of and use all supporting materials, such as pdf files, video and audio clips, links to other websites or relevant articles or papers, as well as the online forum.
- The last lesson will give you the option of downloading an electronic version (PDF) of the course. Please be aware that this information is copyright protected.
- When finished, you will be ready for the test. These tests are "open book" and are designed to help you evaluate your understanding of the subject.
- When you have finished the entire Course Pack, a Certificate of Completion is available online.

By using the Forum feature, students can share information and solve problems. We would like to see truly interactive discussions take place.

Please be advised that links to third party information may not reflect or support the Building Biology viewpoint. However, it might be of some interest to see how other people, groups, institutions, etc. argue the same subject.

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## Lesson 1 – What is the Value of a Home?

Why do people buy houses nowadays? There are assorted reasons, among them, to have a place of one's own, a place to store one's "stuff," a place for the children to grow up, a place to decorate and express one's self, a place to put down roots, etc. For many of us our home is also our greatest financial investment. Saving money on taxes, not throwing money away on rent, having real estate that will appreciate in value over time, all these are important considerations.

What questions do people ask as they search out a satisfactory home? What is its location for resale purposes? Is the school system well regarded? Is the neighborhood well kept and attractive? Does the house meet the family's special needs and desires? Are there three bedrooms and two baths? Is the kitchen large and up-dated? Does the family room connect with the kitchen? Will the children be safe in the yard? Is the house near the family's place of worship? Is it within reasonable commuting distance to work and school? Interestingly one of the most important questions is rarely considered..."Will this home support the health of my family?" In general people are not aware of the huge impact that a home will have on health. If they were aware they would ask some of the following questions: What is the air quality surrounding my home? Is the site free of man-made and naturally occurring electromagnetic radiation? Is the home free of chemicals and toxins? Does the mechanical room emit toxic gasses into the air? Is there a pre-existing mold condition? And so on. This would change the real estate market, the way homes are appraised and valued and finally the way that they are built.

Perhaps you eat organic food, because it is more nutritious for you and ecological for the planet. You pay a little more for it but because you value its benefits; you are willing to invest in it. Perhaps you buy natural fabrics to wear and seek out alternative medical practitioners. The food production, health care, clothing and building are all similar in that they were once a holistic source of locally appropriate, common collective knowledge. In the span from the lifetime of our grandparents or great-grandparents to our lifetimes these systems have been commercialized, decentralized and have created a grave imbalance in our ecosystem. Simultaneously the human spirit the natural world and our relationship to it have suffered as a result of this imbalance.

In this seminar, we will be making a quantum leap in presenting and understanding the inter-relationship between the home, the health of its occupants, and good ecological citizenship.

Do our homes nurture our soul? Is the house beautiful, elevating and peaceful? Are we uplifted upon entering the dwelling? Is there a restful outdoor space or garden by the house? Is there a quiet room provided in the house for meditation or reading?

Pause a moment now. Do you see the change we have made in reasoning here? We have gone from the idea of a house as an investment, which meets the needs of the family to the idea of a house and outdoor space, which is **directly related to the physical and spiritual health of the inhabitants**. For our culture, that is a quantum leap. To reach this level of understanding, the average citizen needs information on how a house works, the part played by building materials, and issues and options for healthier homes.

Then, one begins to uncover relationships that were not suspected before. For example, one might learn that a particular building material is produced from a process needing a lot of heat and that toxic wastes are brought in from another manufacturing process to provide the fuel for the first. What appeared to be a common, ordinary building material suddenly takes on a sinister cast when one realizes the cost to the environment of using this toxic fuel. This leads the homeowner to the logical question: what other building material could I use that doesn't need a toxic process to produce it? This is called a life cycle or "cradle to cradle"<sup>1</sup> assessment of building materials. This course will give you some of the useful tools for making such an assessment.

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<sup>1</sup> McDonough – [www.mbdc.com](http://www.mbdc.com)

## Lesson 2 – Ecological vs. Conventional Building

### Authentic VS Conventional

	<b>Conventional Food</b>	<b>Authentic Food</b>	<b>Conventional House</b>	<b>Authentic Home</b>
<b>Production</b>	Sterile soil, Product based, standardized	Living soil, Bioregional, sea- sonal	Factory based, standardized	Earth based, bio- regional response
<b>Chemical usage</b>	Petro-based ferti- lizers & biocides	IPM, organic soil	heavy	minimal
<b>Labor</b>	Exploitation	Owner, appren- tice	Produced else- where, assem- bled	Locally built, owner/community participation
<b>Processing</b>	Processed, packaged	Unprocessed, unpackaged	Processed, packaged	Minimally pro- cessed
<b>Transportation</b>	+/- 2,000miles Farm to table	Trucked to farmer's market	Global material sourcing	Local material sourcing
<b>Supports Local Economy</b>	minimal	extensive	minimal	extensive
<b>Nutrition/Health</b>	Minimal nutrition- al value	Maximum nutri- tional value	Toxic indoor environment	Nurturing indoor environment
<b>Stewardship</b>	Depletes and toxifies soil, lim- ited accountabil- ity	Restores and enhances soil,  Sophisticated accountability	Short life, land- fill, limited ac- countability	Long life,  Bio-degradable  Sophisticated accountability
<b>Independence</b>	Dependence on factory farm and transport network	Local self- sufficiency	Dependence of factory and transport	Local self- sufficiency
<b>Environment</b>	Degradation, waste	Stewards natural resources	Degradation, waste	Stewards natural resources
<b>Longevity</b>	Topsoil lost, pes- ticides last for generations , GMO unknown harm	Soil remains per- petually fertile	30-50- years	200-400 years
<b>CO<sup>2</sup> Emissions</b>	high	low	high	low

## Building Biology and the emerging “Green Scene”

When Bau-Biologie was first formulated the words “green building” did not yet exist. In the past few years we have seen the emergence of a powerful green building industry. Many new and good tools for evaluating products and scoring buildings have evolved. The goal of this movement has similarities to building biology in that it strives to lessen the harmful impact of buildings. The focus of the green building movement however is primarily on saving the environment from the excesses of human consumption, with human health as a sub-set of that. For example a product may be labeled green because it is recycled and therefore does not end up in landfill. If that product was toxic to begin with and continues to outgas in its second incarnation it may be given points in some of the popular “green building score cards” but it would not meet the principles set by Building Biology.

The focus Building Biology is human health and because humans are a part of the entire ecosystem there is a direct correlation between human health and environmental impact. Many of the important factors that create and promote deep health within the built environment, have not to date been considered within the green building movement. Because of this building biology remains a unique study with much to offer. Through out the coursework distinctions will be made between green building and building biology, which, in terms of human health “goes beyond green”.

How does building biology distinguish itself from building science and the green building movement that has primarily, to date, adopted building science best practice approach?

1. Building Biology is an **inter-disciplinary** study. Our members include architects, builders, building inspectors, public health specialists, alternative health practitioners, Feng Shui practitioners, land energy specialists, physicians, journalists, electricians, concerned homeowners etc. Because of our broad base, the solutions that we seek in order to create healthy living environments are not found solely within the conventional building industry and are more holistic in nature.
2. Building Biology sees the **natural environment as a gold standard** and optimal environment for human health and ecology. The home is thus seen as a biological organism interacting with the environment rather than a “machine for living in.”
3. Building Biology uses the **precautionary principle** in evaluating building choices. The **precautionary principle** is a moral and political principle which states that if an action or policy might cause severe or irreversible harm to the public or to the environment, in the absence of a scientific consensus that harm would not ensue, the burden of proof falls on those who would advocate taking the action. The principle implies that there is a responsibility to intervene and protect the public from exposure to harm where scientific investigation discovers a plausible risk in the course of having screened for other suspected causes. The protections that mitigate suspected risks can be relaxed only if further scientific findings emerge that more robustly support an alternative explanation. In some legal systems, as the European Union Law, the precautionary principle is also a general and compulsory principle of law.<sup>2</sup>
4. Building Biology is a holistic way of building and renovating for health. Unlike “conventional green” where the needs of health and ecology are often in a compromise relationship (i.e. the need for fresh air vs. the need for energy conservation) Building Biology is unique in that **health and ecology are integrally related**. “There is a direct correlation between biological compatibility and ecological performance”.
5. The Building Biology **assessment of a building site** for naturally occurring and man-made health concerns includes the detection of electro-magnetic fields and geopathic zones.
6. Building Biology is concerned with man-made and naturally occurring deviations in the full spectrum of **electro-magnetic radiation exposure**. In this aspect it is not only different than the prevailing “green” stream, in some cases it is in direct conflict with it – for example, the move towards the widespread use of and rewarding of compact fluorescent lighting.
7. Building Biology stresses creating homes with **climatic resilience** as opposed to equipping homes with layers of mechanical intervention built in for resilience against occupant ignorance. Most conventional

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<sup>2</sup> [http://en.wikipedia.org/wiki/Precautionary\\_principle#cite\\_note-1#cite\\_note-1](http://en.wikipedia.org/wiki/Precautionary_principle#cite_note-1#cite_note-1)

homes would not support human habitation if the “grid” went down. In Phoenix they would overheat beyond inhabitability within hours and in a Minnesota winter they would freeze.

8. Building Biology considers many more parameters in its definition of **indoor environmental quality** and in light of this often advocates different materials and methods of construction and operating systems than those that are prevalent in conventional construction in North America.

**Building Biology comparison to Conventional Green Construction**

<b>Building Biology</b>	<b>Conventional “green”</b>
Inter-disciplinary	Industry-based
Nature is “gold standard”	Salvation thru technology
Precautionary Principle	Government Standards
Health and ecology integrally related...direct correlation...	Compromise between health and ecology
Thorough site assessment for health	No concern for geopathic or man-made EMF’s
Importance of EMF exposure reduction in home	No acknowledgment of EMF exposure beyond code compliance
Climatic Resilience	Mechanical dependance
Health first	Energy efficiency first

## Lesson 3 – Building Biology

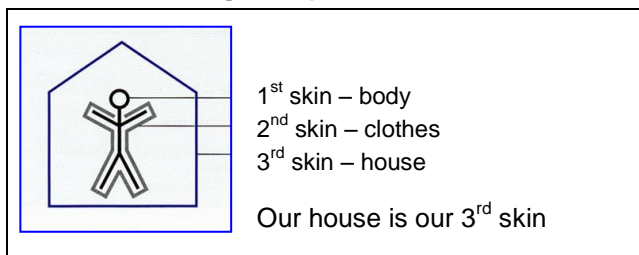
*A specialized branch of Building Science*

Biology is the branch of the natural sciences which studies living organisms and how they interact with each other and their environment. It follows that building biology is a specialized branch of building science that studies the inter relationship between human health, the built environment and planetary ecology. Wikipedia however currently defines Building Biology as a “pseudoscientific activity that investigates the indoor environment for a variety of irritants”.<sup>3</sup> Exemplified in this definition is both a general ignorance of what building biology is and a specific prejudice against natural building in a culture dominated by industrialized, proprietary and product based building. Through the IBE courses we explain how building biology is a holistic and scientific approach to creating shelter and the shortcomings of the current Wikipedia definition will become crystal clear.

### Building the Bau-Biologie® Way

In other seminars we cover more about the diagnostics and cures for health threatening conditions in existing buildings. These sessions will cover an introduction to the Building Biology approach to new building and renovation of existing ones. The goal of IBE is to make the student aware that Building Biology is, in its very essence, a different approach in the creation of health enhancing and ecologically sustainable (regenerative) built environments when compared to what is currently being dubbed “green architecture” in the mainstream of North American Building.

### The Bau-Biologie Aspect The Third Skin



Building biology uses the analogy of the house as the “third skin” of an individual.

Let us examine our own skin, the largest organ of the human body. A person cannot live for very long if the pores of the skin are obstructed because vital “exchanges” essential to life occur through our skin.

This miraculous layer serves a multitude of life giving functions. It is our primary protective barrier against the elements. It absorbs the sun’s energy so that our body can create nutrients such as vitamin D. It is a permeable membrane that allows for the transpiration of moisture in order to regulate temperature and eliminate toxins. Our skin, through this transpiration is able to cool us, through evaporative cooling (otherwise known as perspiration) when we are too hot. It is also capable of shape shifting (Goosebumps and raised hairs) to conserve heat when we are cold. Through it we eliminate bodily toxins in the form of sweat and because of its permeable it has been used to absorb nutrients in a variety of transdermal medical applications.

Clothing, our second skin, should have certain qualities to promote comfort, well-being and health. It should act as an extension of our own skin, being an additional layer of protection against the element and further allowing for the wicking of moisture from our skin. It should allow for free movement and comfort. Natural and organic fabrics do this well while many synthetics cause static (more on that later), trap sweat and odor in and do not do a good job of preserving temperature, especially if they get wet. Just as every indigenous culture has fashioned garments that are a perfect response to their climate, out of natural fabrics at hand, so have they fashioned their homes.

Like our skin, and good clothing the walls of our need to perform multiple functions well in order to create a nurturing environment. Ideally they will protect us from a wide range of hostile external elements while absorbing beneficial ones, allow for the safe transfer of moisture while buffering from the temperature swings outside and preserving a constant temperature within. Just as is true with clothing. Building Biologists have come to the conclusion that natural, minimally processed building materials provide superior environments when compared to synthetic impermeable materials.

<sup>3</sup> [http://en.wikipedia.org/wiki/Building\\_biology](http://en.wikipedia.org/wiki/Building_biology)