LECTURE 9

GENERAL CHARACTERISTICS
OF PHYSICAL AND NEUROPSYCHOLOGICAL DEVELOPMENT
PROCESS IN CHILDREN AND ADOLESCENTS

At this stage of growth and development processes predominate. The growth process means the equivalent quantity of organic matter accumulation. Growth occurs when the intensity of assimilation processes is higher than those of dissimilation.

Growth comes through cell hyperplasia and hypertrophy.

Understanding evolution by developing from simple to very complex levels of biological and psycho-behavioral organization.

Development should be seen as an increase in complexity of the structure and functions as an oriented morphological maturation. Initially cell differentiation occurs, which causes structural and functional changes. Gradually reach appliances and systems improvement and adaptation to a complex evolution with their integration into a unified whole.

These two processes occur simultaneously, so they must be understood and addressed complex. Frequently, the term is understood in the sense of increasing development.

GROWTH AND DEVELOPMENT LAWS

a) The growth rate decreases with age being more intense in young bodies. The intense growth occurs in fetal life during embryonic, fetal followed by (with slower growth). Extra uterine life, growth is intense during the newborn and infant.

b) The growth rate is not uniform, slow growth periods alternate with the intense growth.

c) Growth rate and development of various tissues and organs is different for the same period of time. Growth is not uniform with respect cerebrospinal caudal (literally "from head to toe") and proximal-distal (literally “close to far”). While some organs are rapidly developing others have a slow, stagnant or have even regression. The increase in length alternate with increasing thickness of the different body segments.

d) The development of each organ and tissue is closely related to the development of other tissues and organs. Are there a close relationship between the development of the circulatory and respiratory between building muscle and skeletal system between brain development and analyzers.

e) Physical development of the two sexes has features that distinguish them. At birth, height and weight of girls less than boys and start puberty faster than boys 2-3 years.
FACTORS INFLUENCING THE PROCESS OF GROWTH AND DEVELOPMENT

Although it has been extensively studied, the problem springs intimate process of growth and development, remained still insufficiently clarified. Systematic studies performed by many specialists have allowed the identification of two essential factors represented by heredity (innate factors) and environmental factors (win).

INTERNAL FACTORS
Endogenous factors include factors related to parental body and the conception product.

a) The bodies’ physiological and pathological factors parents mother insists on ignoring the common health problems of the father.
Mother may have health problems or exposure to harmful environmental factors.

Mother’s health status
Uterine malformations, uterine tumors or compressions exerted a tight tank can disrupt development of the concepts.
Women who suffer from heart disease (high blood pressure), respiratory disease or kidney may be exposed to risks during pregnancy. They also have a high probability of low birth weight babies. The biggest problems occur when the fetus is insufficient oxygen (cardiac, respiratory, or problems of development and implantation of the placenta).
Maternal hormonal imbalances may favor the emergence of problems gestation and fetal development. Most problems occur in hypothyroidism, hyperthyroidism and diabetes. Mothers with hypothyroidism, hyperthyroidism or diabetes have an increased incidence of spontaneous abortions, premature births, and the birth of a dead fetus or malformations.
Initially it was thought that the placenta is an effective barrier to some diseases or substances present in the maternal. The placenta is an effective barrier to bacteria, but viruses readily pass into the fetal circulation. The fetal immune system is inadequate, so he can not prevent dissemination of pathogens in different tissues. It is known teratogenic effect of rubella contacted the mother during the first three months of pregnancy. Also other viral diseases can have the same effect such as mumps, chicken pox, measles and influenza. Syphilis is a venereal disease caused by Treponema pallidum. Bacteria do not cross the placenta during the first 16-18 weeks, so that the diagnosis must be made before the fetus is affected. Of protozoa Toxoplasma gondi, crosses the placenta showing teratogenic (brain damage, eye, limb). Fetus can be infected during birth, due to infection of cervix and vagina.
Maternal age is an important factor because young mothers are at increased risk of giving birth to children with low weight or premature, while older mothers have an increased risk of giving birth to children with chromosomal abnormalities.
Fetus may be adversely affected by high temperatures, so the mother should avoid saunas or hot baths too general.

Mechanical factors
Intrauterine environment reduces the possibility of injury to the fetus. However major trauma mothers (falls, collisions and accidents) can affect.
Nutritional status of women of reproductive affects all aspects of his life such as the age of onset of the menstrual cycle, ovulation and conception. Acute or chronic malnutrition is accompanied by menstrual disorders, increased risk of miscarriage, birth of fetuses and premature death. Good nutrition involves providing the necessary animal and vegetable proteins, animal and vegetable fats, carbohydrates, vitamins (particular attention should be paid to ensuring an appropriate intake of folic acid deficiency is a risk of exposing the fetus to birth) and minerals.

**Administration of drugs**

Effect of administering thalidomide is known to prevent nausea (children had malformations of the limbs). Negative effects are present on administration of antibiotics (streptomycin, tetracycline) in excess of vitamins A, B₆, C, D and K, barbiturates, antidepressants, volatile anesthetics.

Particular attention should be paid to anticonvulsive drugs that generate deficiency of folic acid deficiency favors the occurrence of malformations especially the nervous system. Currently, doctors recommend avoiding, if possible, medicines during pregnancy.

Psychotropic drug includes heroin, methadone, LSD and marijuana. Heroin crosses the placenta so that dependent children are also addicted mothers. Social drug is the alcohol, nicotine and coffee.

Alcohol is important as the mother (both before and during pregnancy) and the father. Frequently, maternal alcohol consumption is associated with miscarriage, premature births or the birth of children with low weight. It was described fetal alcohol syndrome characterized by specific facial appearance (facial asymmetry eyes on) cardiac malformations, limb malformations, mental retardation.

Maternal smoking increases the risk of miscarriage, birth of a stillbirth or death shortly after birth. For those who survive have identified fetal tobacco syndrome manifested by retarded physical and neuropsychological development, increased cardiac malformations, increased risk of sudden death or occurrence of respiratory problems.

Caffeine is found in coffee (large amounts) or in tea, cocoa and chocolate (small amounts). Coffee consumption is associated with an increased risk of miscarriage, with premature birth, birth of children with low weight or appearance of malformations (however there is a positive correlation between maternal coffee consumption and congenital malformations).

b) maternal exposure to environmental factors - in this category include exposure to radiation, chemical pollutants and noise.

Produce a primary radiation damage causing cell death and secondary damage inducing metabolism and cellular permeability. Is very sensitive cell during mitosis and hence shows great sensitivity to irradiation of gametes. The effect is both mutagenic and teratogenic and depends on the dose of irradiation and during pregnancy (critical periods). Another problem is related to exposure to X-rays (medical explorations), especially in the first half of pregnancy. Children of these mothers have higher chances of developing cancer or leukemia in childhood do.

Computer terminal pregnant women exposed to electromagnetic radiation, which would favor the occurrence of miscarriage or malformations. It is possible to intervene and other factors such as stress or retain professional long sitting position. However it is recommended that in the first trimester pregnant women to use computers only 20 hours a week.
Chemical pollutants in the environment or workplace can easily reach the maternal blood and the placenta into the fetal circulation here. Unfortunately, his liver has limited metabolic capabilities and enzymatic and transport systems are immature, so that these substances cause serious imbalances.

Dad can also be responsible for the transmission of defects, but its role has been less studied. Father's health is especially important regarding the possibility of transmitting genetic defects of congenital problems. Exposure to radiation, chemical pollutants, lead, pesticides and drugs (marijuana) lowers sperm counts and motility as the emergence of its genetic. Alcohol is a factor that favors the emergence of genetic abnormalities that will transmit descendants. Paternal smoking is accompanied by the birth of children with low weight and increased risk of cancer in adulthood.

Father's age is associated with the occurrence of genetic mutations that increase the risk of birth of a child with Down syndrome or Marfan.

**Physiological factors**

These factors related to product design, and this category includes genetic, endocrine and metabolic.

a) genetic factor - is primarily hereditary distinctive features of the human species, such as human anatomical structure and conformation, the vertical position, a metabolism, all vital reactions (nutrition, defense), certain features of the nervous system and organs sense. These features are specific, but there are hereditary transmissions of minor features (nonspecific) such as a mark, some features in the conformation of the body, skin color, hair or eyes.

There is a control height and leg length and trunk is genetically determined. But a child who is genetically scored high value for height; reach it, only in favorable environmental conditions.

It can show the development of genetic determinism brain cortex structures, the number, nature and position of the main nerve network connections. Number of neurons is a genetic characteristic of the species.

b) endocrine factors - we assumed the existence of a hypothalamic growth center, which is responsible for ensuring growth, according to the genetic program.

Maternal and placental hormones act differently depending fetus ability to cross the placenta. Somatotropic hormone, glucocorticoids and minerals and easy-corticoids pass through the placenta, while thyroxine and insulin harder.

Thymus regulates the metabolism of nucleic acids and mineral elements (calcium).

Pituitary, by growth hormone influences protein synthesis own and seems to have an inhibitory effect on the synthesis of fat and carbohydrate oxidation. The epiphyseal cartilage cell proliferation thereby stimulates bone growth.

Thyroxine and thyroid acting through the triiodotiroxinei stimulating protein synthesis and ribosomal RNA. Hormone is involved in growth and maturation as bones, teeth and brain.

Parathyroid involved in nutrient metabolism helping to maintain constant serum calcium and bone calcium mobilization when needed.

Endocrine pancreas produce insulin is a hormone with anabolic effect which promotes cell transport of glucose, glycogenesis and lipogenesis.
The adrenal glands affect water and nutrient metabolism by hormones, minerals and steroids. Androgen stimulates protein metabolism, influencing the development of bones and muscles.

Gonads enter in activity in puberty by releasing testosterone or estrogen, favoring the development of germ cells (sperm or eggs) and secondary sex characteristics.

c) metabolic factors are very important because underlying morphological phenomena and fiziogenează. Describing the child which inherited diseases of metabolism occurring biochemical abnormalities are genetic in nature. In this context, enzyme abnormalities, for which no cause is determined, i.e. whether it is a structural abnormality affecting function or a decrease in the rate of synthesis. Sometimes it suppressed the synthesis of a finished product key, so progress is slow.

In other cases accumulated deficit precursors placed upstream of the enzyme, which has a toxic affect.

These metabolic abnormalities of genetic origin are interested in all biological systems of the human body: Hemoglobinopathies, hemostatic abnormalities, abnormal cellular transport of hormones and immunoglobulins.

**EXTERNAL FACTORS**

Exogenous or environmental factors include geo-climatic conditions, the origin of the family environment, socioeconomic conditions, nutrition, housing, family, physical education, health and pollution.

**Geo-climatic conditions**

These conditions can influence growth, but interpretation of results must be made in conjunction with the flora and fauna of the area, i.e. food.

Generally people living at altitude are smaller than those living at sea level, and these differences appear at birth. People living in warm climates have an elongation of the lower extremities, while those who live in cold climates have an elongation of the trunk.

Height growth appears to be faster in the spring and summer, while the weight in the autumn-winter. This phenomenon has not yet been satisfactorily explained, he was given hormonal secretion changes, observing activity levels vary by season.

Also, the increase in height can be influenced by solar radiation (and ultraviolet light) increased spring and summer.

**Family backgrounds (urban / rural)**

Source environment greatly influences a child growth and development. Physical development of children in urban areas is higher than rural children. This phenomenon exists in all European countries. Exceptions are children in Australia and North America where there are differences.

Age of onset of the menstrual cycle varies from urban areas, but these differences are not present in Australia and North America. Urbanization is not just a simple increase in population density, but is accompanied by a good supply of water and food, broad access to education and health care institutions. Unfortunately urbanization is accompanied and negative effects, such as
the great density of population, especially in the suburbs, with minimal equipment. Pollution occurs in urban areas is an important factor affecting the growth and development of children and their health.

**Socio-economic status**

Socio-economic status plays a crucial role in influencing child development and other factors such as quality of food, housing and the care for it. In this indicator insists income parents and their educational level. Attention is given to poverty, studied both by lack of money and the cultural and social depravity.

a) In families where money is poor diet lacking in quality products (especially proteins), the house is dirty, and overcrowded with minimal facilities and quality care for children is modest. Vaccines are made only when they are free, and medical treatments are observed only in cases of emergency hospitalization

b) poor families is the cultural and social depravity. Social class is synonymous with parental education, and household income residential neighborhood.

**Nutrition**

Food is influenced by family income and must provide the necessary nutrients to support qualitative and quantitative growth process. Today we face problems such as malnutrition. Under conditions of inadequate dietary intake, growth and development process is slow, lowers resistance to infection and toxic substances in the environment, there is a slow intellectual development. In situations of excess food increases the risk of degenerative diseases (obesity, diabetes, cardiovascular disease, breast and colon cancer).

**Home environment**

Housing is closely related to socio-economic level of the family. A dwelling is appropriate when the number of rooms is equal to the number of family members and has the necessary facilities (running water, electricity, and toilet). Current water supply system will be done by central or local, which brings water to the tap. Tap water for drinking has different characteristics specific for each country. House will be equipped with drainage systems that will ensure hygienic removal of feces household waste. Without these minimum features increase the frequency of infectious diseases especially those that are considered gastrointestinal diseases of poverty and misery.

**Family**

Childhood family is essential because it favors the emergence of relationships based on affection, stimulates the development of moral behavior and gives a certain tone social aspirations. In family child gets a name and corporate identity. All these elements contribute to the development of a child psychiatric unit where such structures persist language.

**Motor activity**

Exercise triggers off some adaptive responses and reactions that stimulate the growth and development. He works in the musculoskeletal system and its required through breath and movement, exchanges nutrients and cell regenerating process as neuroendocrine control system.
Health status

Health influences the growth and development but at the same time it is influenced by several factors.

First of all is the genetic factor that influences the degree to which certain populations are susceptible to certain health problems. Thus, cystic fibrosis is common in whites, blacks and almost nonexistent rare in Orientals. Glucose 6-phosphate deficiency is common in Mediterranean populations (Italian, Greek), African (black), Oriental and Asian.

Many chronic diseases occurring in childhood, causes disruption of growth and development. This includes congenital heart abnormalities, respiratory disease, malabsorption syndrome, as well as digestive enzyme defects.

Under a low socioeconomic level malnutrition is frequently accompanied by slow growth or even no (depending on the disease).

At the opposite pole are placed children in developed countries showing an acceleration of growth and development. Unfortunately, longitudinal studies have found a positive correlation between growth in height and weight on the one hand and incidence of breast cancer on the other.

Environmental pollution

Pollution is a factor in the external environment, which has seen a strong development in the last 150 years. Currently, he is subjected to the action of the complex air pollutants, water and food. Unfortunately, a chemical in the air, settling, reaching the ground or water. If reaching the ground gradually penetrates deep to plant roots (to be taken by it) or to groundwater. Basically, the pollutant reaches all environmental factors requiring body from many directions.

PHYSICAL AND NEUROPSYCHOLOGICAL DEVELOPMENT

AT TODDLERS (0-3 years)

The growth rate is very intense, 3 years weight increases 4 times and 2 times the size of the value of the birth. There is a sharp increase in leg length and thickness and a slow increase in length of head and trunk.

Thermal regulation is very labile. Thermogenesis is increased due to accelerated metabolism (caused by intense pace of growth of the whole body, especially in muscle mass and intense activity). Thermolysis is also high due to large skin surface in relation to body weight and subcutaneous tissue is poorly developed.

Basal metabolism is worth twice that of the adult (2.0 kcal / kg / hour).

Musculoskeletal. Child birth spine is straight, 3 months cervical curvature occurs and the child is able to lift his head, at 6 months the child develops curvature sit back, the lumbar 9-12 months - standing.

Musculature is poorly developed at birth. This increase is followed by a proximo-distal direction - one muscle at the base of the trunk and limbs.

Respiratory system - initially involved little chest breathing, which is the type diaphragm, the newborn respiratory rate is 35-40 breaths / min and decreases to 3 years to 30 breaths / minute breaths are irregular rhythm and amplitude modifying easy.

Cardiac device - cardiac volume is more dependent on body weight and body surface rather than age, height or chest size, vascular bed has a great section and is increased heart rate
tachycardia in newborn physiological—reach 130-150 beats / minute), blood pressure rises progressively instead (initially has a value of 80-90/40-50 mmHg and increased to 90/60 mmHg at 3 years).

Kidney machine - toddler eliminates 2 times more urine than adults, up to 1 year sphincter no control cortical, by 1 year is functional maturation of the link between reflex control centers and higher nerve centers leading to installing control of cortical discharges.

Digestive system - stomach capacity is small and secretory activity reduced from 6 to 30 months is growing deciduous comprising 20 teeth - 6 months median lower incisors in the upper median incisors 8-10 months, 10-12 months incisors upper lateral, lower lateral incisors 12-14 months, 18 months molars, canines 18-24 months.

Brain - 50% of postnatal brain growth is achieved in the first year of life and another 20% in the second year, at this stage myelination process is very intense.

Sense organs - the eye is relatively well developed at birth, the optic nerve fibers are myelinising to 4 months initially and then the objects are fixed monocular binocular, newborn retina lacks cones (color insensitive) but 6 months is becoming sensitive.

Hearing is fully developed immediately after birth, the newborn differentiating tones at 4-5 hours after birth.

Cognitive processes - memory is initially touch was evaluated by placing the object outside the visual field. Toddler reaches all the items you discover in this way. Child's attention is unstable in infants, with predominantly involuntary, voluntary attention stability does not exceed 15-20 seconds infant. Infant is predominantly egocentric thinking, that everything works dependent on him.

PHYSICAL AND NEUROPSYCHOLOGICAL DEVELOPMENT AT PRESCHOOL CHILDREN

The growth rate is slower at 7 years is 50% increase in weight and waist 20% compared to the value of 3 years. Maintain a high growth leg length and thickness.

Basal metabolism is double that of the adult.

Musculoskeletal system - begins ossification of long bones and muscle growth by increasing muscle strength, movements are not very precise due to the imbalance between flexor muscles (better developed) and extensor (less developed). In this context prolonged static efforts are not possible, but the ability to handle the objects gradually increasing.

Respiratory system - breathing is the diaphragm type, respiratory rate decreases gradually, gradually increasing vital capacity; preschooler cope exercise by increasing respiratory rate.

Cardio-vascular - heart weight increases gradually, lowers heart rate and blood pressure rises progressively, face exercise by increasing heart rate.

Digestive system - stomach has a small capacity requiring food split into three main meals and two snacks, from 6 years starts changing temporary teeth upper and lower molars, incisors inferior median and the median upper incisors 7 years.

Kidney machine - urinary excretion is controlled by the will, kidneys are in high demand due to accelerated metabolism.

Nervous system - the brain is slow growth instead develop capacity to respond to stimuli auditory / visual increases the understanding of tasks, learning, differentiation, by handling objects.
Sense organs
- It improves the visual analysis of shapes, sizes, colors, spatial relationships of objects;
- It improves the ability of differentiation and integration of sound messages to its psychological and intellectual level.

Cognitive processes - memory is involuntary, based solely on associations. Voluntary attention becomes more stable, the ability to concentrate attention increases from 5-7 min to preschooler small middle 20-25 min and 45-50 min. at large. Preschool children's thinking is centered on certain symbols, egocentric and no possibility of generalization (logical thinking is still limited).

PHYSICAL AND NEUROPSYCHOLOGICAL DEVELOPMENT AT SCHOLARS

Accelerated growth is 10-14 years in girls and 12-16 years in boys.

Energy requirement decreases gradually, reaching basal metabolism value from 1.5 to 1.7 kcal / kg / day in adolescents.

Respiratory system - lower sternum, ribs are oblique, breathing becomes chest, lower coastal males and one female superior, respiratory rate decreases while the vital capacity increases. After puberty, the volume increased respiratory effort occurs.

Cardio-vascular - heart rate decreases while blood pressure increases, the effort is increasing stroke volume.

Digestive system - food should be split into 3 main meals and snack, is developing permanent dentition:
- 6-7 years median lower incisors;
- 7-8 years median upper incisors,
- 7-8 years lower lateral incisors;
- upper lateral incisors 10-11 years;
- 9-10 years canines of the mandible;
- 10-12 years canines in the upper jaw;
- 8-9 years first premolar;
- 10-12 years the second premolar (the upper jaw);
- 11-13 years second premolar;
- 6-7 years first molar;
- 12-13 years the second molar,
- 17-25 years third molar.

Excretory function device is close to that of adults.

Nervous system - is improving knowledge functions, attention, memory, thought, perception, representation.

Sense organs - is improving gradually; sight - is improving for in-depth, visual sensitivity, visual acuity, hearing - is improving phonemic hearing (the words) and structure characteristic sounds of words.
Cognitive processes
Memory young pupils retain some features found in preschool children, particularly child retain what impressed.
Memory in adolescents is based on logics, information withheld is presented in an original style. Young children's attention to voluntary does not exceed 30 minutes, developing and selective attention.
At teenager growing attention in terms of concentration, the volume and the possibility of subordination of interests. Young children thinking evolves from the concrete operations stage, the egotism vanishes. Thinking teen gets a great flexibility progressively to an optimal level.

EDUCATIONAL PROCESS OF CHILDREN AT DIFFERENT AGES

FACTORS WHICH INFLUENCE THE ABILITY TO WORK AT STUDENTS

Resilience of children and adolescents in the effort required educational activities in school is influenced by:
- age - physiological changes are more intense as students age is less;
- sex - muscle strength is lower in girls, especially at puberty;
- intensity, duration and character requests - child body adapts more easily than in the static dynamic activities, for activities lasting intensity applications should not exceed 15-20% of maximal effort, training increase business efficiency;
- emotional state - emotional - fear, sadness, anxiety stress, coercion, lack of interest may cause reduced working capacity;
- working conditions - thermal discomfort, noise, dust, air pollution, toxic substances, inadequate school furniture, lighting and heater unsanitary, inadequate microclimate, insufficient ventilation workrooms The negative effects young body, reducing intellectual and physical work capacity of children;
- health - in the incubation period of acute illness or recovering decreases physical work capacity and intellectual development also chronic diseases (endocrine - pituitary, thyroid, adrenal - rheumatic fever, nutritional disorders, heart disease) can reduce resilience to stress.

FATIGUE PHENOMENON AT SCHOOL

After an intense activity manifested by the phenomenon of fatigue degradation of performance in terms of quantity and quality of the work.
Fatigue is a complex condition with subjective and objective manifestations of neuro-psychiatric and neuro-sensory, motor and functional changes in visceral and endocrine-metabolic.
Fatigue becomes apparent through reduced capacity to understand abstract problems, reducing the possibilities of generalization, comparison, differentiation, disturbance in attention, memory difficult emergence of an imbalance between task difficulty and effort to fulfill volunteer to do so.
Sometimes subjective and objective psycho-physiological phenomena represented by depression, irritability, anxiety, apathy, changing attitudes towards work, behavior modification in the classroom and at home.

Increased fatigue may occur in disorders of organs include: headache, palpitations, chest pain, hypertension fleeting sensations of choking, abdominal pain, anorexia, flatulence, increased thyroid signs of hyperthyroidism, anemia, muscle pain, loss weight.

**HYGIENIC CONDITIONS IN EDUCATIONAL INSTITUTIONS**

The school is located in the residential district. It is preferable location near home school for the child to travel a distance of 0.5 to 3 km or 30 minutes by public transport. Great distance from home to school is a driver fatigue. Ground school must provide an area of 10-50 m² per student.

In the main room there for school educational process and auxiliary rooms. In the main rooms within the classroom, physical education room, laboratories and drawing hall.

Classroom will provide an average area of 2.5 m² and an air space of 5-8 m³ per person.

Classroom walls will be painted in light colors that reflect light and the ceiling will be painted white binding. The floor is parquet or linoleum indicated. The door is placed in front of the class and opens out.

Classrooms will ensure a temperature of 18-20°C, 30-60% relative humidity and air velocity of 0.2-0.3 m/s.

Windows will make a report 1/4-1/5 light, with the lower end 80 cm from the floor and the top near the ceiling. At the top of the windows must be the skylight (*oberlicht's*) which opens obliquely toward the ceiling. Fluorescent artificial lighting will provide a minimum of 300 lux.

Physical education rooms are equipped with changing rooms and toilets, separated by sex.

In the gym provides an average area of 4 m² per pupil. The floor is hardwood, rubber or linoleum pressed. Physical education room temperature will be of 16-18°C.

Laboratories provide an area of 2.5 m² per student and a minimum of 6 m³ cubing student. In the laboratory floor is cement or mosaic, and tables covered with ceramic or earthenware. In chemistry lab hoods arrange niches fitted with absorption of evolved gases.

Drawing room will be oriented to the north to provide a diffuse light and artificial lighting will provide 400-500 lux.

In category of auxiliary rooms enter the school medical practice, assembly hall, library, chancery and administrative offices.

The school is connected to the central water supply and waste removal feces waste. Where it is not possible connection to water supply plants will arrange their own source of water distribution network features. If there is no public sewage system then you make a plant collection and disposal own feces household waste.

Bank must have dimensions close to those of the student to help ensure posture.

The correct position is that the bank feet stuck to the ground and forming an angle of 90° with legs, legs forming an angle of 90° with hips and thighs forming an angle of 90° with trunk.
Size must be adapted to the size of the child seat so that:
- seated body to provide symmetry;
- feet to reach the ground;
- lower extremities have a neutral alignment;
- easy to maintain position.

Seat height is equal to the length of the leg, plus 2-3 cm heels shoes. In this position avoids pressure in the popliteal space.

Seat depth is equal to 2/3-3/4 of student thigh length. This prevents pressure in the popliteal space and fall apart. The fall shoulder commonly occurs in the lumbar area at students that are not in contact with the backrest.

Backrest will go back to the lower angle of the scapula posture which ensures the free movement of the trunk and arms.

The angle between the seat and backrest will be between 95-110° to ensure a comfortable position. Some authors recommend an angle of 90° to the hip and knee and back so it should be vertical. However, this position is tiring if maintained for a long time.

Panel has a slope of 150 which gives a distance of 30-40 cm between the book and the eye pupil.

There are certain relationships between elements of the bank:
- seat distance is the distance between the rear edge of the desk and the front edge of the seat (lowered perpendicular to the posterior edge of the desk should be placed behind the edge of the seat);
- back distance is the space between the rear edge of the desk and back;
- difference in the distance between the rear edge of the desk and upright chair, it must be equal to the distance from the elbow area child seat attached to the body plus 4-5 cm.

Desk size will be eight sizes for the following groups of students height:
- 101 to 110 cm
- 111 to 120 cm
- 121 to 130 cm
- 131 to 140 cm
- 141 to 150 cm
- 151 to 160 cm
- 161 to 170 cm
- over 171 cm

RULES FOR SCHEDULING ACTIVITIES DURING SCHOOL TIME AND IN SPARE TIME

An ordinary day work schedule of a student includes: teaching time (hours), homework time, sleep and rest, time for some personal business, leisure, other occupations.

Teaching time (classes) varies depending on the student’s age. Maximum capacity of intellectual effort is morning between 9-11 am and 9-12 for small schoolchildren for adults and afternoon between 15-18 hours. Working capacity decreases between 13-15 hours at night after
19 hours. In a school training program should start after 7:30 (preferably 8:00) and will not exceed 19 hours.

Where the number of classes is high school is organized in two shifts. Teach primary school children in the morning and the secondary school in the morning and afternoon (depending on their class). In large schools, teach high school students in the morning and in the afternoon gymnasium.

Under the legislation, students in class were scheduled 3-4 hours daily, while those in classes II-IV, 4 hours a day. In middle school schedule is 4-5 hours and 5-6 hours for the school. Duration lessons will not exceed 30 minutes in grades II and 40-50 minutes from large classes.

Per week, schedule for first grade school must comprise more than 20 hours to up to 24 hours for grades II-IV. In secondary schools this number increases reaching 25-28 hours and even high school 30-35 hours.

Since first grade the child will be learned to pay attention to curriculum, to engage in discussion and problem solving. Modern pedagogy attention participatory methods in which the student role is essential. Between student and teacher (teacher) should be a continuous dialogue that allows pupil to understand and even learn from classroom theme.

Homework time is different depending on the age and style of student work. In general, the primary activity is allowed at home ½ - 1 hour during middle school students increased to 2-2½ hours to reach the high school at levels 3-3½ hours. Long time necessary homework load is due curricula and inadequate dosing tasks by teachers.

Cumulating classroom learning with the home follows a very busy students. Such 4th graders to teach 6 hours a day when the high school class get up to 10-11 hours per day.

Another important element is represented by objects that you start preparing. Recommendations made by specialists varies daily schedule.

Students complete courses that teach morning at around 13-14. After a short rest period they grabbed learned optimal time work schedule ranging between 16-1900.

The child begins with those objects whose content is easy to read and remember. Follows then that raises difficulties objects and in the end those considered mild. Specifications for objects not do difficult or easy for a student because this is dependent on individual skills. There are students for whom mathematics is a pleasure and others for whom it is a problem.

Students learners afternoon I get home at around 18-19. In most cases they are so tired themes that will solve no problems. Morning between the hours of 9:12 curve reaches maximum effort so that homework is not an issue.

**Rest and sleep**

Rest and sleep needs are higher for students than adults. A student needs 6-7 years 11-12 hours of sleep and one of 18 of 9 hours of sleep. Only after 20 years needs to get 8 hours sleep, typical values for adults. Unfortunately, in many cases reaching the time to sleep decreases to values below those recommended for adults (6-7 hours per night).

Active recreation is an integral part of the daily curriculum.

For student learners morning, active rest is scheduled immediately after school hours (after hours 13-14) and in the evening before bedtime. To student learners active leisure afternoon program is placed immediately after school (after hours 18-19) and lunch before going to school. Young can follow radio or television, read various literary, drawing, blends, self related to each hobby.
Time for personal necessities include the period during which the child is toilet gymnastics refreshing and sitting at the table.

Leisure is part of a student's program. It is time spent together with friends to play, walk, see a movie.

In other occupations included housework (cleaning the room) and some extracurricular programs (hours swimming or tennis, learning a foreign language, hours of piano).

Over a week and a half school terms there are fluctuations in work capacity. During the week we see a low work capacity months, followed by a maximum yield on Tuesdays and Wednesdays. Thursday ability to work to decrease drop is evident Friday. The gradual decrease of work capacity is due to summation requests from previous days.

During a semester initially witnessing a period of adjustment to school work regime. Then comes a few months after high school performance (1-2 months) and finally to reach even lower yield of reducing body weight accompanied the students.

**HABITATION HYGIENE**

**HEALTHY HOUSING**

Culture refers not only home to its best possible arrangement but also proper maintenance permanent because it may become inappropriate if they do not meet certain conditions.

Conditions which must meet housing is estimated by studies conducted in each country, geographical area, taking into account the traditions, culture, economic status, and therefore cannot be universally valid. They are valid for a certain stage of development, change over time, depending on the evolution of society, the taste for beauty, economic opportunities.

General recommendations issued by WHO for healthy housing are:

- physiological needs by providing sufficient space, a comfortable thermal environments, an appropriate quantity and quality of natural lighting, direct exposure to sunshine premises, protection against physical and chemical pollution and foul air;
- prevention of diseases by avoiding congestion, adequate supply of drinking water, adequate sanitation provision, equipment for food preservation, removal of toilet waste, prevention and control of insects and rodents in your home, avoid outbreaks of dirt inside and outside the home;
- protect against hazards in the home and its neighborhood by using quality construction materials, the strength and flammability, avoiding risks of poisoning, burns and electrocution, slips and falls;

  - Providing psychosocial needs by addressing individual and family isolation and achieve a harmonious life, features that facilitate household work, pleasing appearance of the dwelling, access to well stocked and equipped units serving the population, adequate transport and green spaces relaxation, exercise and rest.

**Home location**
The home is located in residential areas of the municipality, which are protected by pollution sources must have drinking water, possibilities of solid waste removal, land is salubrious, solid, without risk of slipping, not be exposed to avalanches and floods and to provide opportunities to develop green spaces.

Structure is preferably loamy soil and soil porosity and permeability to be good for filtering water and vegetation growth. Clay soils are not suitable for residential construction as retaining water, causing stagnant collections. Calcareous soils warm up quickly and promote rapid infiltration of groundwater. Rocky soil does not allow the growth of vegetation and cause heat buildup.

No dwelling shall be located on land that were previously buried residues, fillers or unstable.

In residential areas, from the design phase will precisely locate the necessary equipment such as commercial establishments, socio-cultural (nursery schools, kindergartens, pharmacies), public catering services. Also are important places for the location of storage platforms garbage collection containers and spaces for beating carpets, they must meet a minimum distance of 10 m from house windows.

Spaces for children to play golf should provide 1.3 m² / capita and car parking will be made at least 10 m from living room windows. Green spaces must provide 2 to 2.2 m² land / capita.

Industrial units, commercial service that pollutant shall be located in separate buildings at least 15 meters from residential windows.

**Housing orientation**

Positioning refers to long walls, fitted with windows to the cardinal points. Optimal arrangement of the rooms is provided in Figure 1.

![Figure 1. Optimal orientation of the rooms regarding the cardinal points](image)

Given to our country, the dwelling optimal orientation is south or southeast. This orientation ensures a sunny winter solstice at least 1 ½ hours / day accommodation and bedrooms.

**Building materials**

They must meet the following requirements and architecture:
• insulation (allow to maintain a constant internal temperature, materials with hollow spaces are good insulation);
• acoustic (provides protection against noise);
• waterproofing (protects home from water intrusion through walls, roof and foundation, waterproofing material does not permit dampness);
• elastic, high strength,
• flammability and low hygroscopicity
• easy maintenance

**Burnt brick** meets most conditions: is insulating, have high strength, low hygroscopicity and provide soundproofing.

**Concrete** (especially autoclaved aerated concrete AAC) has strength and durability, but is less insulation and soundproofing.

**Plastics** are used mainly for interior design; fulfill the conditions listed above with some exceptions: release of toxic, high temperature decomposition and accumulation of electrostatic charge.

**Wood** has some qualities but also some flaws: the insulation, Soundproofing and elastic as negative action to customize with low resistance and high flammability.

**Unburned brick** (adobe) is inappropriate due to: low resistance, the degradation issue dust, dirt, bacteria or parasite eggs.

**Indoor facilities and equipment**

Number of living rooms can be equal to the number of persons in a family, or you may not be allowed to be less than this one (two children of same sex parents live together).

The surface must be provided to a person is 8-16 m² and minimum cubic capacity of 30-35 m³.

The living room is the room where the family spends the most time, so will be the largest, with the best guidance.

Bedrooms should be oriented to ensure optimum rest.

Be located near the bedroom bathroom with steam and noise buffer space. Finishes must be durable, easily washable, water proof and seal the floor drain. Mandatory bathroom facilities will include a sink, a toilet bowl, bathtub or shower.

The kitchen can vary in size depending on the destination (excluding meals or activities and dining). The walls and ceiling will be covered with non-conducting material to reduce condensation heat of water vapor. Sink next to dishwasher and stove fitter recommended by waterproofing and oil.

The need for food is controversial camera can be replaced with a fridge which has a capacity corresponding family needs.

Room height will be less than 2/3 of their length and greater two thirds of their width.

In terms of color is recommended: yellow, blue, lime, white with reflection coefficient of 70-80% are stimulating and relaxing to view.

**Thermal or micro house ambience**

Represents all the physical properties of air (temperature, humidity, airflow, caloric radiation) that influences body thermoregulation.
Small oscillations of microclimate factors have a positive role, boosting capacity thermoregulation, while large amplitude oscillations have adverse effects on the body. Lack its variations (greenhouse conditions) lower body strength, increased sensitivity to infection.

The air temperature in the home depends mainly on outdoor air temperature and used building materials, room orientation, number of exterior walls. It is recommended that the optimum value of temperature 18-22°C, summer does not exceed 26°C.

Room air humidity depends on the situation outside air, the overcrowding of housing, activities therein. Optimal relative humidity is between 35-65% with an average of 50%.

Air currents are produced by ventilation, human activity breathing. It is recommended that speed is 0.1 to 0.3 m / sec and not exceed 0.5 m / sec.

Caloric radiation of accommodation usually have an intensity that does not adversely affect people from home. Radiator temperature must not exceed 80°C and to avoid excessive positive or negative radiation temperature of the walls, ceiling, and floor must be as close to the room temperature, which depends heavily on their insulating qualities.

**Indoor air pollution and health impacts**

Since over 85% of the time is spent indoor, indoor air quality is very important. Children, the elderly or sick, spend most of their time in some form of habitat type or habitat type house special.

Even in places where outside air is relatively clean, such as in the mountains, indoor air can be highly polluted. For the sake of saving energy, increasing thermal insulation of buildings and reducing ventilation creates an environment conducive to concentration of pollutants in indoor air.

Indoor air quality depends on various parameters such as intensity sources of pollutants that may be different or by duration (if the emission is continuous as that of construction materials, such as roasting or intermittent, "do it yourself" activities). Temperature, humidity and air velocity were greater role in emissions, especially of organic compounds. Renewal of air and outdoor air quality significantly affect air quality in a location.

Indoor pollution is a real problem with significant risks, which occurred during the last decades. This may be caused by pollutants from outside air or pollutants produced indoors.

**Health effects**

Respiratory system is the first victim of the atmosphere during the hours spent in such conditions.

Young children spend a lot of time at home and also are more sensitive their respiratory device development is fragile.

Elderly, asthmatics are sensitive to allergic persons or pollution that may result in bronchial hypersensitivity, prepare a chronic bronchitis and asthma trigger.

Even healthy persons respiratory system is a genuine treatment may be subject to poisoning or irritation. Health risks are different depending on sources: cigarette smoke, asbestos, radon degradation of which is carcinogenic. Combustion products, some bacteria or fungi can cause respiratory disorders. Superposition of all these factors is unclear relationship with respiratory disease or cancer.
Pollution from external sources
Outdoor air pollution affects indoor air quality in most homes because it produces a continuous exchange of air with the outside. Without current measures insulation, indoor air in a house is completely changed in two hours. Insulating windows is a barrier only for dust while easily insinuates gaseous pollutants inside.

Sulfur dioxide comes from outside.
Indoors concentrations during winter are 15-20% relative to the outer and 40-45% in summer because of aeration which is more important.
Especially nitrogen oxides from the exhaust gases of motor vehicles and easily penetrate the housing. The same thing happens with carbon monoxide.

Lead resulting from industrial sources, but mainly from road traffic. Percentage of entering the housing is 50-70%. Penetration is more intense on the ground floor and most important summer than winter because of frequent opening of windows.

Ozone inside buildings is 20-80% of its external concentration. By prolonged exposure in indoor air of certain categories of persons, indoor exposure to ozone may be more important than the outside. Ozone is recognized as an aggressive agent for the respiratory system with possible acute effects and chronic effects due to aggregation and can accelerate aging lungs.

Radon can contaminate soil inside the house from which the building is located, and the materials used in the construction of water respectively.

Pollution from domestic combustion appliances
Combustion appliances include heaters, hot water production, food preparation, which uses a solid, liquid or gaseous. These devices produce nitrogen oxide, carbon monoxide and carbon dioxide while burning wood in the stove or fireplace can increase inner content of benz (a) pyrene and dusts. If the hob is used LPG (Liquefied Petroleum Gas) or methane gas instead of electricity, the concentration of NO can be 8 times higher than outdoor kitchen. NO concentrations diminish very slowly, without ventilation. Any person with respiratory problems may be affected by repeated exposure to this gas.

Combustion appliances may emit CO in addition to that produced by breathing, smoking, reducing oxygen through improper ventilation. Exposure to CO converts hemoglobin to carboxyhemoglobin, which prevents blood to ensure its normal function of oxygen transport.

Home environment products
Maintenance of premises, body care (deodorants, lakes), using numerous products containing active substances, solvents and propellants. Cleaning ovens, windows, insecticides, deodorant for rooms are examples of domestic products. Active byproducts are as small drops easily inhaled. A variety of volatile organic compounds are emitted by products of maintenance. Among them, aromatic hydrocarbons are very much scattered. Some deodorants can contain up to 10% toluene. WC deodorant products contain 42% dichlorobenzen, whose emission lasts for several weeks.

Office equipment
Office may be the origin of the emission of significant quantities of toxic products. The trivial gesture releases methyl chloroform liquid corrector, studies have been directed particularly to paper carbonless duplicating and photocopying machines at first complained of discomfort was
attributed to formaldehyde. Then, attention has moved on polychlorinated biphenyl compounds. Reactions reported with this type of paper may be due to oil, body volatile irritants that crosses epidermal and dermal layer and reach the blood.

Can be induced pathology is cutaneous -mucosa with nettle rash, contact dermatitis, eye, nose and throat pathology.

**Tobacco smoke**
Tobacco is the case every year, 2.5 million deaths in the world. In the last decade the medical world has become more attentive to the consequences of smoking on non-smokers exposed to high concentrations of a multitude of chemical pollutants in tobacco smoke. Actively campaigns against smoking could not protect smokers, but smoking is desirable that health can be protected.

**Formaldehyde**
Is a component of the troposphere, much methane comes from degradation and also the incomplete combustion of motor vehicles that are not subject to catalysis. Formaldehyde enters into the composition of various products: wooden busy preparations for nails, paper and textiles.

Tobacco smoke is a major source of formaldehyde in indoor air. A smoker of 20 cigarettes / day aggregate is exposed to inhalation of 1.0 mg of formaldehyde.

High concentrations of formaldehyde were detected in busy kitchens furnished with woodwork assembly due to heat and humidity. Insulation products based on urea-formaldehyde foam are a source of formaldehyde in our inside climate. They are prohibited since 1980 in Canada and 1982 in the US.

Other sources of formaldehyde are carpets, plastics, painted floors.

**Artificial mineral fibers**
This term includes fiber inorganic substances, derivatives glass and clay. Fiber means any particle whose length is at least 3 times their diameter.

Mineral wool comes from basaltic rocks and containing a variable percentage of 40-60% calcium carbonate and magnesium. The main constituents of mineral wool are silicates (45-53%), alumina (6.5 to 13%), lime (11-30%).

**Asbestos**
Asbestos can contaminate air premises are often public buildings or school premises. Sometimes students are exposed when asbestos insulation can be done properly, with the risk of mesothelioma.

Vinyl-asbestos tiles are completely harmless in this regard. If materials are compact, such as asbestos-cement or asbestos-plastic fiber release is not involved within the premises, except mechanical intervention at their level.

Car traffic would be equally responsible for an increase in the concentration of asbestos fibers in the vicinity of heavy traffic points, after brake pad wear and disc clutch.

The health risk depends not only on the concentration of asbestos fibers but also the type of fiber. Asbestos is the name applied to six distinct mineral varieties chemically and physically: chrysotile, crocidolite, amosite, anthophyllite, tremolite and actinolite.
The two major target of this pollutant are serous mesothelial lung parenchyma, either as inflammatory phenomena that lead to fibrosis or cellular transformation as you evolve into cancer.

**BIO CONTAMINANTS**

In indoor air, bioefluenţii coming from the biological activity of human and pets, in addition microorganisms constitute a particular category of pollutants.

**Sources**

*The human body microbial reservoir*

Man with normal physiological functions, is a source of indoor air pollution.

Emit a variety of respiratory droplets during respiration and speech, which are large scale and quickly deposited. When coughing and sneezing, produced a large number of very small droplets that remain suspended in air for a long time, are able to penetrate deep into the respiratory system.

Peeling skin is a major source of particles. Movement of the people, shaking the clothes, suspend per second more than one billion particles larger than 10-15 microns. Each individual produces annually 10% of its weight in skin scales containing several hundred bacteria.

Human scent. The human body eliminates many volatile substances on the body surface and orifices. These include pyruvic acid, lactic acid, methane, ammonia, acetaldehyde, butyric acid, ethyl alcohol, methanol.

Carbon dioxide (CO$_2$) is the most important bioeffluents and can reach in some offices, levels 2-7 times higher than ambient. Health effects of these levels are variable: headache, general fatigue and drowsiness in some people observed at concentrations of 2,000 ppm.

Humidity. The more and more individuals, the humidity increases. By breathing a person produces at least 300 g water vapor / day.

**Pets**

Pets are a veritable microbial reservoir. Experiments in France and America have found that the presence of a major allergen cat induced increase in 30 minutes. After leaving the animal allergen remains a non-negligible amount. Use vacuum can lead to increased contents of this allergen, as is explained in allergic asthma, a few hours after using it.

**Microorganisms present in the home**

Among the 10.8 million particles that we inhale daily are "living particles" and inert particles. Microorganisms include viruses, bacteria, microscopic fungi, various debris and animal droppings, pollen; especially mites are among the most important allergens.

Some viruses and bacteria when are released by man or animal are not viable in the air long time. Others, such as staphylococci, survive several days without multiply in air and dust. Wet environments allow some species such as *Pseudomonas bacillus* to survive months or even years.

In homes, the most common are mites microorganisms. Dust mites are microscopic insects (400 microns) that inhabit carpets, mattresses and pillows and feed on human dander. One gram of dust can find such 2,000-3,000 microorganisms. Their debris promotes allergies and the
development of asthma. An air disturbance increases their concentration in the air violently, but regression is fast since the air movement stops. North-facing rooms contain a high amount of mites from high humidity.

The glucans (a polysaccharide of D-glucose monomers, linked by glycosidic bonds) from molds surface, may explain some symptoms of eye and throat irritation associated with fatigue, headache (poorly ventilated houses).

Among fungi, often are involved filamentous spore species like Aspergillums type. Ordinary molds develop in decaying organic matter, contaminates man by air or through the dissemination of spores in the air.

False ceilings are often involved, especially if humidity rotten the insulation materials. Cleaning difficult to reach areas where dust and spores that accumulate can be possible sources of contamination.

Mold contamination can affect patients at risk, showing neutropenia, bone marrow aplasia, bone grafts, patients on corticosteroids, chemotherapy, diabetes.

Bio contaminants were much covered by incidents during air-conditioning malfunctions. Air conditioning aims to provide a hygrometric and thermal comfort. It may be a faulty poor conception for installation or maintenance.

The desire to create an ideal environment for humans often made an ideal environment for germs.

Conditioning systems shall microbiological contamination problems while reduces pollen content, avoiding allergy symptoms during critical periods.

Humidifiers or air conditioners fever disease is attributed to bacteria, amoeba or actinomycetes that grow in their pipelines. Filters retain 90-99% of the dust in the air breathed, except actinomycetes, which have a diameter less than 0.1 microns.

Manifestations of allergic alveolitis type have been described and confirmed by the discovery of precipitating antibodies in the serum of patients exposed to thermophilic actinomycetes.

Legionellosis is a serious lung disease with fever, headache, digestive signs and dyspnoea as the only respiratory symptom.

The causes of these diseases are poor design of these installations and defects of maintenance.

Faulty conception
- improper air intakes orientation relative to prevailing winds and proximity to areas of pollution, which involves penetration of outdoor air pollution;
- presence of a cooling flow near a new air intake, which carries a risk of dangerous microbial genus Legionella aerosols;
- insufficient filtration cannot remove toxic particles and allergens;
- recycling faulty air;
- closed circuit humidification is contaminated aerosol dispensers;
- release of fiber glass wool plant cover air tightness disorders air distribution pipes by corrosion material.
**Maintenance defects**

It is a plant with difficult access; replacement filters pretty rare, poorly supervised operation of the fan, cleaning insufficient cooling tours etc.

The air conditioning system must respond to numerous demands in order not to be a source of trouble:
- air intake must be carefully studied;
- judicious choice of filters and placing them as close to the place that must be protected, plus periodic verification;
- use of humidifiers without recycling of water that must be seriously checked and disinfected;
- size and fan control system to be adapted to avoid noise pollution;
- accessibility for periodical checks facility.

**Waste removal systems vacuum**

These facilities are located in blocks, allowing discharge to municipal waste in a vertical pipe that empties into a container. In research conducted in these devices was found that the total number of germs is 13 times higher than in air kitchen, staphylococci and streptococci D are abundants.

**Housing humidity-a pathogen factor for tenants**

This is a particular pollutant effects for health and state building.

**Action humidity on other pollutants**

Firstly humidity favors the growth of microorganisms: mold, fungi, yeasts, dust mites, which are the origin of allergies and respiratory diseases.
- Formaldehyde is emitted faster in damp atmosphere.
- Ozone has a lifetime and intensity of activity subject to moisture.
- Radon atoms gives rise to polonium, electric positive, favoring agglomeration moisture droplets, increasing penetration and fixation of radioactive progeny in the lung.
  - In the presence of moisture, increased degradation of synthetic carpet fibers, making increase of airborne fibers.

**Protection against external moisture**

Soil moisture is most unpleasant. Prevention against it must be taken during the construction of a building. The foundation is particularly important. Drainage is one of the most effective means for avoiding the wall to act as a "water pump".

**Protection against interior moisture**

Indoor humidity is explained by: heating, cooking, drying linen, respiration and perspiration occupants.
- At 20°C satisfactory humidity is between 40-60%.
- Below 30%, the air is dry, dry respiratory mucosa and enables the development of pathogens.
- Over 80% of the air is too moist and prevents perspiration evacuation.
Ventilation is a good measure for renewal polluted air.

Air vitiation
In crowded places occur changes of physical properties represented by the removal of heat by radiation, convection; increasing the ambient temperature, evaporation, relative humidity increases and removal of water vapor in the breath.
A prolonged exposure to polluted air negative generates effects of different intensity depending on individual sensitivity, degree of vices, exposure time.
Symptoms: bad status (fatigue, sweating, headache, dizziness, nausea, loss of appetite), decreased work capacity (decreased attention), somnolence.
Sometimes exposed persons are reaching to unconsciousness and eventually to death.
In situations of chronic exposure to a vitiated atmosphere appears anemia (especially in children), adynamia, decreased resistance to biological and chemical agents, slow growth.

SICK BUILDING SYNDROME
Degrading the quality of indoor air has been involved in the development of Sick Building Syndrome (SBS).
It considers that it involved a single responsible factor, but there is an interaction of several physical, chemical and psychological.
Air chemistry and bacteriology are not the only elements of indoor air quality. Noise, light, electromagnetic fields play an important role in housing and population health.

Strategies for cleaner indoor air
Limitation of indoor air pollution is a more ambitious goal than reducing air pollution.
Emitting source reduction and adapted ventilation can significantly reduce the level of pollution.
Reduction of emission sources is about:
• reducing combustion pollutants: stop smoking, use of hoods over the stove, heating equipment maintenance, cleaning chimneys, reducing vehicle operation inside the garage;
• reducing the use of organic byproducts (solvents, acids, strippers, tights, paints, limes) in well ventilated mobile treatments, to reduce organo-chlorine compounds, excusing excessive use of deodorants, colored latex;
• the microorganisms and allergens from the air: removing pets in case of allergies, reduce moisture to reduce the number of mites, housekeeping will not do to sweep the dust up in the air but vacuum fitted with filters, cleaning with steam carpets and other surfaces to use acaricide products, paint acaricide (kills arachnid, ticks and mites)

Ventilation
The three objectives of ventilation are:
• stale air exhaust,
• air fresheners
• control humidity and condensation.
Natural ventilation is achieved by the temperature difference between outside and inside a home, though it varies with the season is important especially in the cold winter, summer ineffective.

Mechanical ventilation allows air to constantly correct change. Usually are used two systems: with simple (single) or dual flow.

Mechanical ventilation with simple flow is mechanical extraction of foul air and entry of the natural air. The polluted air is sucked in the kitchen, bathroom, toilet, crossing pipeline valves is discharged outside by fan.

Fresh air from outside enters in the house through the entry site based on depression created by the fan. Newly introduced air flowing through the main rooms, before being removed from all rooms.

**TABLE I**

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Mechanical ventilation system also includes dual flow air extraction but also carries the additional equipment that introduces air again.

The two networks are intertwined extraction and power in an exchange that allows air heating cold winter. The air that comes from outside is filtered before being brought supply circuit to remove pollutants.
REFERENCES