

Guide and instructions for the implementation of the Green Page Environmental Health Diagnostics

1. Introduction and Justification

Environmental factors determine health, quality of life, growth and development of children and at the same time impact the health of adolescents and of future adults. Children and adolescents are exposed to positive and negative environmental factors. The embryo, the fetus and the young child are particularly vulnerable to these environmental factors, many of which (regardless of their nature) act synergistically.

According to the World Health Organization (WHO), more than 40% of the world's burden of infant morbidity can be attributable to environmental risk factors and affect children younger than five years old, a group that represents approximately 10% of the world's population. Every year more than 3 000 000 children younger than five years old die worldwide – specially in underdeveloped zones – due to causes and afflictions related to the environment. (*Descriptive note WHO/284, January 2005*)

The identification of the negative environmental factors that can compromise health since the moment of gestation, infancy and/or later in adult life is essential for the implementation of adequate preventive and curative measures: mitigate exposure, inform parents, better the environment and better medical attention.

Environmental risks can be of different nature: physical, chemical, biological and social. These present themselves in diverse media (water, air, soil, food and objects), can be present anywhere (home, school, rural areas, street, community and others) and can be related to different children activities (play, learning, recreation, work and others).

2. What is the Green Page?

The Green Page is a new tool that forms part of the clinical history and can be used in symptomatic and asymptomatic patients. It adds a new element: a description of the environment that surrounds the child, exposure characteristics (real or potential) and its possible effects. In addition, it allows medical personnel to become aware of the environment that children live in, and that of the mothers, fathers, families and communities. This kind of information improves clinical service and also allows building the capacity of healthcare professionals responsible for the well-being of children and alerts the authorities about those environmental situations that need to be corrected or remediated.

On a different note, the Green Page manifests the value of positive environmental factors where environmental quality contributes to the child's well-being, health and development.

On certain occasions, a deeper or more detailed search that would require to use complementary questions (e.g. in the toxicological area) will be necessary. The filling up of the Green Page can face a series of obstacles such as: lack of time, scarce knowledge of the subject, lack of resources, lack of motivation, among others. All these can affect the applicability and registration of the Green Page, but can be overcome if the right conditions are created, such as capacity-building, allocation of resources and incentives for professionals that gather the information (e.g. publication, exchange of information)

3. Purpose

The Green Page is an instrument for the harmonious recording of information about the child's environmental conditions in all the places where the child's life develops. The person taking the data has to remember the great amount of hours that children and adolescents spend in different environments, specially in the closed ones.

The Green Page allows for an approximation to environmental diagnostics to characterize positive or negative factors and to detect the most vulnerable individuals or groups (for example, children living in

poverty that live in marginalized zones or in settlements with no basic sanitation infrastructure, or children exposed to pesticides en rural areas or for excessive indoor use, ...).

In case of disease or faced with certain signs and symptoms, the documentation of the environmental condition provides the elements to suggest or establish, if present, an environmental etiology.

The periodical registry of the Green Page allows for a longitudinal follow-up of the environmental history of the environment and the clinical elements of each individual and contributes to the construction of environmental indicators of disease.

These environmental diagnostic records will allow – in retrospective – the identification of possible antecedents and emergent clinical causes that can be expressed later, during adolescence, adult stages or throughout life.

4. Instructions to complete the Green Page

The Green Page can be completed, in an individual or preferably in a shared way, by family doctors, general practitioners, paediatricians, nurses and other health care professionals and/or health care personnel or personnel from environmental and social sectors that have received education on Children's Environmental Health. It is advised to start with a pilot experience (e.g. 100 cases) to adjust the questions according to the local needs and to also determine criteria about how to take the registry, specially because in some occasions, the number of patients is high and cases will have to be selected.

Section I

I.

Patient's name:		Address:		Date:	Case record (number):
Sex:	Date of birth:			Professional recording data (name & position):	
With whom does the child live?				Living environment:	
Is he/she working?		- Rural - Urban - Peri-Urban			

Collection of three kinds of information:

- **Identification:** Patient's name (*surname and name*), sex (*F or M*), date of birth (*day/month/year*), and complete address (*street and number, phone number, email, neighbourhood, location, province and country*).
- **Service Information:** Date of visit (*day/month/year*), clinical history number (*same as in patients records*), professional evaluator (*name, surname and title of the person taking the information*).
- **Special Information:** Who does the child live with? (*note the number of people living with the child and their relationship*), Does the child work? (*note yes or no and the type of work, for example, car washing, street vendor, rural/field worker, helps parents or siblings in their workplace, household tasks and others*), Where does the child live? (*note if it is rural, urban or suburban*), other information (*note any relevant information with relation to these items*).

Section II

Does the mother/care giver express concerns about the environment? Which ones? Why?
Are there any well-known environmental risk factors in the area? Which ones?
Mother's and father's occupation
Is there overcrowding? (more than 3 people / standard room)
Are there pet animals at home and in the surroundings? Which ones?
Are there vectors of disease? Which ones?
Has the child suffered traffic-related injuries? Describe
Has the child suffered fire-related injuries or other? Describe
Has the child been exposed to chemical incidents? Describe
Has the child had poisoning due to chemicals and/or food poisoning? Describe
Is there exposure to venomous/poisonous animals?
Is there exposure to extreme temperatures? Describe
Observations (other relevant information)

This section registers the perception of environmental risk by the next of kin or the responsible adult that accompanies the child to the medical visit; it establishes the main present environmental situation and past history, evaluating the different situations that can occur at home, in the community, in the workplace, as well as past exposure history or risk behaviour and “accidents”.

In the spaces provided following the questions, brief notes on the responses by the mothers or next of kin must be recorded. The majority of the questions are self-explanatory, although it has to be taken into account the way they are relayed to the families so as to facilitate their comprehension and allow for a harmonious collection of information.

There is also space to note any observations that are considered relevant and are not included in the questionnaire.

Section III – ABC's of Environmental Conditions

This double entry table allows for the recording and visualization of the principal environmental variables listed in the first column with relation to the most common places where the child lives, learns, plays, works or develops. Given that this table allows for subjective interpretation, here are some directions for guidance. It is possible to assign a numerical value for every variable and to approximate the level of environmental risk from 5 (low risk) to 15 (high risk). The classification of every parameter will vary according to the place (home, school, recreation area, workplace and community).

The preparation of a block, neighbourhood or health centre map (coverage area) is a very useful instrument to locate the cases or pathologies observed in relation to the potential effects of exposure (e.g. factories, waste sites, incinerators, intensive culture and others). This scheme map can be attached to the green page.

III.

"ABC" OF ENVIRONMENTAL CONDITIONS		Home	School or Centre	Recreation area	Workplace	Community
BUILT ENVIRONMENT A. Excellent – B. Average – C. Precarious						
GEOGRAPHICAL AREA A. Low risk – B. Medium risk – C. High risk						
FOOD (quality & supply) A. Adequate – B. Uncertain – C. Contaminated						
AIR A. Clean – B. Average – C. Contaminated	Indoor					
	Outdoor					
WATER A. Potable – B. Average – C. Contaminated	Drinking					
	Other uses					
SOIL/FLOOR A. Adequate – B. Average – C. Inadequate						
SEWAGE DISPOSAL A. Adequate – B. Uncertain – C. Inadequate						
WASTE DISPOSAL A. Adequate – B. Average – C. Inadequate						
NOISE A. Low – B. Medium – C. High						
CHEMICAL EXPOSURE A. Low risk – B. Moderate risk – C. High risk						
TRAFFIC A. Low – B. Moderate – C. Intense						

Built Environment

A. EXCELLENT: is made from good quality building materials. It offers protection from pollutants, climate factors and the transmission of disease (for example: door screens against mosquitoes). The building materials are resistant, have insulated floors (material), installed bathrooms (no urinals) and have basic services (electricity, sewage and access to drinking water).

B. AVERAGE: provides essential protection, but is not optimal and/or lacks all basic services (evaluate for example: urinals, black water wells, soil floors, humidity, others). It is habitable but without fulfilling adequate sanitation requirements.

C. PRECARIOUS: built with low quality materials (for example: sheet metal, cardboard, plastics and others); is primitive, lacks basic services and does not comply with general conditions for protection and/or sanitation.

Geographical zone:

Evaluate the risk of flooding, drought, deforestation, earthquakes, hurricanes, natural disasters, conflicts or even social violence or war (with reference to the security of the zone).

A. LOW RISK: geographical zone without any identifiable environmental threats, not a zone of violence

B. MEDIUM RISK: geographical zone where there exist some of the previously mentioned adverse environmental risks (or others)

C. HIGH RISK: geographical zone in a state of great environmental deterioration

Food

The origin and the quality of the food needs to be considered, as well as handling and preparation methods and the conservation and storage conditions in the home and places where the foods were obtained (cold chain).

A. ADEQUATE: those that are produced, expended, utilized and stored under strict quality control or within the general norms of sanitation and hygiene

B. UNCERTAIN: those where suspicions arise or can be identified, such as: contact with chemical or biological contaminants, low quality home manufacture, poor hygiene during preparation (no hand washing, not potable water used for cooking, dish washing) and inadequate storage

C. CONTAMINATED: those where there is the certainty of their poor quality and storage and/or knowledge of the lack of sanitation during their handling

Air

The classification is divided into indoor air (homes or local) or outdoor air. (Note: To adequately rate the air quality, there are tests and measures required that might not be available. If this quantitative information is available it is of interest and should be recorded in the Green Page under "Observations").

A. CLEAN: clear and breathable, no smells or smoke, free of particulate matter, dust and other biological contaminants

B. AVERAGE: sometimes smells are present, particulate matter and biological contaminants (see contaminated description below)

C. CONTAMINATED: smells, smoke and particulate matter. Indoors: dust mites, mold, cigarette smoke and interior combustion of biomass fuels, without a fireplace.

It is important to inquire about their perception of the air quality (for example: smells) and daily practices (smoking habits, cooking and home heating with coal or wood without appropriate ventilation, others). In addition, their proximity to industrial facilities, silos, massive pesticide application sites, open sky garbage burning sites, depots or intense traffic sites.

Water

The classification is divided in two: drinking water and water for other uses (hygiene and recreational). Its availability and origin (potable water, well water, others) is described in the table as "available services".

For this classification, there is a need to analyze the perception about the quality of the drinking water and its uses: is there a sufficient water supply for all its uses or if for example, personal hygiene practices are carried out with non-potable water or the origin of the water used for watering domestic vegetable gardens, among others. It is also important to investigate and to take into consideration its collection and storage (used containers, rain water), its recreational use (the use of chlorine in indoor swimming pools, swimming in contaminated rivers, others), its proximity to possible sources of toxic emissions (agricultural, industrial zones) and its origin (e.g. well, rain tank).

A. POTABLE: of physical, biological and chemical quality (it fulfills the norms of the codex alimentarius). It does not affect health status, originates from certified sources and undergoes periodical quality control. Its supply is sufficient and adequate

B. AVERAGE: it is suspected to be contaminated but there are no measurements about the degree of contamination

C. CONTAMINATED: when there are measurements and parameters available that indicate physical, chemical or biological contamination or when its quality is obvious

Soil/floors

For characterization purposes, it is necessary to inquire about the composition, the quality and the cleanliness of the soil/floor. The lack of hygienic practices, humidity, the use of pesticides, the presence of insects or animals, the proximity to tool deposits, work areas or loading and unloading areas, raising of animals, the use of machinery or any other situation that could be considered as a source of contamination and represents a hazard to the health or the integrity of the child.

In addition, it is important to consider the past uses of the soil/floors (dumping sites, industrial soils, etc.)

A. ADEQUATE: the soil/floor is made of quality materials, clean.

B. AVERAGE: the soil/floor is made of low quality materials, with some identified risk factors.

C. INADEQUATE: the soil/floor is of poor quality (or earth) with high risk factors identified.

Sewage disposal

Inquire about the existent sanitation infrastructure of the home (bathroom, urinal, others), septic tanks (controlled), sewage systems, waste disposal (with or without waste disposal services, open sky disposal, burial). It has to be taken into account that there could be sewage disposal or inadequate waste water disposal or close to sources of drinking water or inadequate disposition of disposable diapers. Especially in communities, homes or settlements near water systems (oceans, rivers, lakes and others) where there is sewage disposal without previous treatment. Also, consider in this case, the use of the land and water (for example, fishing practices) in the proximity of the sewage disposal sites.

A. ADEQUATE: installed bathroom(s), hygienic and accessible, with sewage connections, sewage disposal and sanitation; bathtub and shower for personal hygiene

B. UNCERTAIN: bathroom is far or incomplete, with poor hygienic conditions

C. INADEQUATE: no bathroom and/or sewage system, lack of sanitation and lack of personal hygiene facilities

Waste disposal

Inquire about the management of waste in the home, school, recreational areas and community (origin, storage, collection services, handling, transportation, treatment, final disposal of leftovers and waste).

Explore the consequences of poor waste handling (smells, contamination or proximity to water sources), soil or air contamination, insects or rodents as disease vectors (typhoid, gastrointestinal diseases, parasites, others).

A. ADEQUATE: waste disposal collection system is functional and effective

B. AVERAGE: poor waste handling, discontinuous waste collection

C. INADEQUATE: no waste disposal collection, open sky burning of garbage and proximity to dumpsites.

Noise

The term “noise” refers to sounds that are not desired, that interfere with the communication between individuals and that can cause damage to their health and affect their well-being.

The classification (low, medium, high) will vary according to the place (home, school, recreation areas, workplace and community) and will depend on the perception of the person taking care of the child.

Care should be taken to identify of the most common sources of noise: traffic due to proximity to highways and worksites, loud music, machinery, aerial traffic, trains, construction sites, others. It is important to investigate noise of short duration but of great importance (pneumatic hammers, sirens, fireworks, explosions, telephone in some circumstances) that can originate from toys or caused during child play, or in the case of adolescents listening to loud music and in hospitals (incubators, ventilators).

A. **LOW:** minimal or barely perceptible, is not bothersome or has any effect

B. **MEDIUM:** bothersome, persistent and sporadic, it is harmful, results in loss of concentration and is uncomfortable (proximity to heavy traffic, train routes, factories, discotheques)

C. **HIGH:** of great magnitude, causes pain and is harmful (proximity to airports, rock concerts, sirens, fireworks, firearms, others)

Chemical exposure

The perception of possible chemical exposure has to be analyzed (smells, smoke, others), the use of pesticides, recent renovations, household work, rural work areas where in contact with pesticides, consumption of foods that have been recently sprayed with pesticides, others.

In addition, consider the proximity to contaminated sites, rural zones that have been sprayed with pesticides, industry, open burning of garbage, contaminated water sources, industrial deposits or industrial treatment plants, others.

A. **LOW RISK:** there is no constant or sporadic exposure to smoke, smells or chemical substances

B. **MODERATE RISK:** sporadic exposure to smoke, smells and chemical substances

C. **HIGH RISK:** constant and repetitive exposure to smoke, intense smells, pesticides, solvents, contaminants and industrial by-products (dump sites, industrial contamination, agricultural zones, incinerators, others)

Traffic

The consequences associated with traffic are noise, air contamination and the possibility of traffic accidents.

There is a need to investigate the relation to traffic zones where children live and develop: rural areas (for example, situations where children drive tractors or agricultural machinery) or urban areas (proximity to highways and avenues) or the quality of transportation systems (during rush hour, in vehicles not apt for the transportation of people).

A. **LOW:** scarce, no air pollution and no noise

B. **MODERATE:** moderate and sporadic traffic, air pollution and noise

C. **INTENSE:** proximity to zones of high automobile circulation and heavy traffic areas with heavy air pollution and heavy noise.

Section IV - Available services

PUBLIC SERVICES AVAILABLE:	HOUSING	SCHOOL	COMMUNITY
ELECTRICITY			
COMMUNICATION (PHONE, RADIO, OTHER)			
WASTE COLLECTION			
FINAL WASTE DISPOSAL			
PUBLIC TRANSPORTATION			
PUBLIC LIGHTING			
HEALTH CARE CENTRE			
EXCRETA TREATMENT PLANT			
SEWAGE SYSTEM			
WATER SUPPLY			

Listed in this double entry table and in the first column, are basic services that enhance environmental quality and the quality of life (available services) with relation to the most common places where children grow and develop in the second, third and fourth columns.

Note YES or NO upon the presence of absence (respectively) of each basic service.

This information will allow making a quick environmental diagnostic by evaluating the availability and access to basic services.

Section V

Reunited notes of the relevant elements collected during the interview, to facilitate the recording and visualization of the information and rating it under the different categories (construction, geographical zone, food, air and water quality, type and quality of the soil/floor, sewage and waste disposal, noise, chemicals and traffic) and a space for additional comments.

Comments and Recommendations (including date)