COUNTRY PROFILE (Final Draft)

Children’s Environmental Health in Suriname

2003
A. INTRODUCTION

a. Overview of children’s environmental health in the country

Children’s environmental health as a distinct issue is generally a new line of thinking for most government officials. Healthy environmental for children is therefore not a distinct objective in the National Policy Plan for Children (Beleidsplan Kinderen 2002-2006), Ministry of Social Affairs. This document does however describe policy guidelines focusing on preventative control measures of children’s health (see also Chapter B.a)

Generally spoken there are marked differences between the situation in the interior (mainly populated by Maroons and indigenous people) and the urban and rural region. Children’s environmental health in the interior definitely needs more attention due to the unfavourable situation. Environmental health as indicator is now in a developing stage. The National Health Information System (NHIS) included environmental health issues as indicators.

For the moment the situation with regard to water supply and quality, sewage (waste) disposal, solid and liquid waste disposal, pollution, occupational health, veterinary public health, food safety, quality control of drugs, pesticide control, vector and rodent control and port health are described.

The next step is to improve the quality of data and more active information based on planning and decision-making.

However there is no specific analysis of the influence these indicators have on the health of children.

b. Key environmental issues

The key issues listed for Suriname, in order of priority are:

1. drinking water & sanitation,
2. waste management,
3. vector borne diseases,
4. agricultural chemicals,
5. toxic substances,
6. food safety,
7. accidental injuries,
8. air quality.
Drinking-water en Sanitation

Water resources are found as either surface or groundwater and abundantly available as only 0.2% of the internal renewable resources are being extracted. Because of its superior quality, groundwater is the primary source in the urban and coastal rural areas while in the hinterland the population generally resorts to the use of surface water. Surface water quality in urban as well as rural areas is under severe stress due to poor sanitary practices, high groundwater table and industrial and mining activities.

At the end of 1998 about 90.6% of the people in the urban area were connected to the public supply, while 7.6% had easy access. This situation is dramatically less in the rural areas, i.e. the coastal zone and the interior, where only 34.0% have piped water supply in their home and 23.9% have easy access. These levels of coverage as well as those for sanitation are calculated from data from the Multiple Indicator Cluster Survey (MICS) carried out in 1999 and 2000.

The distribution systems in all areas are compromised through poor maintenance, water theft and leakages. This results in pump breakdowns, low pressure, intermittent supply and high potential for contamination. In some cases tanker trucks are in operation to provide services where the piped supply has broken down completely. Furthermore, mercury pollution from artisanal gold mining activities in the interior as well as excessive pesticide use on agriculture lands in coastal areas are a major threat to drinking water quality. In the absence of good monitoring data, and considering the fact that disinfection is not practiced, the statement that piped drinking water in Suriname is safe can not be substantiated.

The Health Promoting School Committee and the Inter-American Water Day Committee facilitated a number of watersupply and sanitation improvement projects with a strong emphasis on community participation and private sector funding. A rehabilitation program for the drinkwater distribution infrastructure or the greater Paramaribo area by the National Water Company is underway.

Sanitation

In the absence of operational public sewerage systems, 83.4% of the households in the urban areas are connected to septic tanks for the disposal of their excreta. 14.6 % of the urban population use pit latrines. In the rural coastal zone and in the interior this coverage is 27.9% and 28.1% respectively. The effluent of septic tanks, though, discharges into open storm and street drain, ditches and canals, while the sludge from septic tanks are being discharged in canals and rivers. The MICS indicate that 44% of the rural population have no access to sanitary facilities, and this is mainly because of the lack of facilities in the Interior, where nearly 70% of the people use the fields, bush or river.

Waste Management

Although many studies on the management of waste have been carried out in the past, no specific policy, nor program for waste management has been formulated or established. There is also no legislation regulating waste management. Also waste management is not included in the medium term development plan of the government. Household waste is only collected in (most areas) of the capital city and in Nickerie (West Suriname), Groningen (Central North Suriname),
Lelydorp township (South of capital). Presently all waste is being discarded and burned in open dumps in low lying areas, causing environmental pollution.

**Vector borne diseases**

The Bureau of Public Health (BOG) has responsibility for vector control activities, houses the Anti Malaria Campaign (AMC) and the Dengue Crash Program. However, lack of resources severely hampers effective implementation of plans. The Roll Back Malaria plan was developed by the Malaria Board (comprising the Ministry of Health, AMC, PAHO, the Army, the health services for the coastal zone (RGD) and the interior (Medical Mission. The Suriname government has applied for the Filariasis Eradication Certificate with the WHO test to achieve this are being conducted. Suriname is party to Agenda 21 (chapter 6 refers to topic) and the Johannesburg Summit.

**Agricultural Chemicals**

The Pesticide Act, defines policies on agro-chemicals, but its revision is not yet operational. Agricultural Department of the Min of Agriculture, implements a training program “Good Agricultural Practices”. This training program mention concerns for children’s health in the safety precautions.

**Toxic substances**

Suriname is party to the Rotterdam convention on Prior Informed Consent Procedure for certain hazardous chemicals and pesticides in international trade (1998) and the Stockholm convention (2002) on the control and elimination of certain Persistent Organic Pollutants (POP’s). In the absence of an operational Health Information System, incidences of children pesticide poisoning is not collated. In spite of instructional training by Agricultural Department, certain farmers do take unnecessary risks in pesticide handling. Because of lack of expertise and equipment no control and monitoring of pesticide residues on vegetables is undertaken. There is a general lack of Land-use Planning and small scale industry are allowed to be establish within residential areas and sometimes close to schools. This poor planning practise results in dangerous situations for public health (exposure to toxic chemicals and fumes). There is also a general poor awareness of safety aspects in the at home with respect to household chemicals (there are no data available on death rate due to this cause).

**Food Safety**

Food labelling not has become mandatory in Suriname, indicating manufacturer, date of expiration. Spots checks are being carried out by the Public Health Inspectorate. Also the Ministry of Trade and Commerce executes control on expiration dates (Operation Hawk). Incidental newspaper articles by food technologist of the University of Suriname give information and advice on food poisoning and precautions to be taken.
Accidental injuries

Police conducts traffic instruction combined with drugs information in primary schools and in TV programs. Use of seat belts in cars is not obligatory. Pilot project in Nickerie (West) to deal with children affected by rape and domestic violence.

Air quality

Police conducts visual checks on exhaust fumes of cars during obligatory annual car safety inspection. No proper equipment available. No programs on exhaust fumes in place (industrial or domestic). Smoke free schools program by PAHO/Min of Health and Min of Education. Households using biomass for cooking in closed huts is no common practice with the indigenous people and maroons living in the interior of Suriname. Acute respiratory infections are the leading cause of deaths in infants under the age of 1 year.

c. Key causes of infant and under-five mortality/morbidity Indicators

The table1 (annex 2) shows the key causes of infant and under 5 mortality and morbidity indicators. Foetal death increased by 14% between 1998 and 2000, while over the same period still birth rate, infant death rate, peri-natal death rate and maternal death rate increased with 15.7%, 12.0%; 17.4% and 73.9% respectively.

This increase can be partly explained by improvements in reporting and case identification of deaths. However, this increase is also partly due to aggravation by increasing economic hardship.

Perinatal death (62.5%) is the main cause of death for children younger than 1 year (table 2), while the morbidity of intestinal and respiratory infections for this age group is 8.3% and 2.8% resp. For the age group 1-4 years the morbidity of intestinal and respiratory infections increased significantly to 16.7% and 16.7% resp. for boys and 15.4% and 23.1% for girls (table 3). Vector born related death under girls (1-4 yrs) is 15.4%. (No death reported for boys in this category)

The main cause of death for young children and adolescents is trauma from external causes 68.3% for males and 50% for females (table 4). Of the total reported external death causes for females, 20 % is due to transport accidents and 20 % due to suicide, 5% is due to assault and 5 % to accidental drowning. Mortality for vector borne diseases are 7.3% (males) and 15% (females). Respiratory infections have declined to 2.4% males and 5% for females in this age group.

Table 5 shows the morbidity date from clinic visits in the interior for the year 2002. These clinics are operated by the Medical Mission (the Primary Health Care provider for the interior of Suriname). The data shows very clearly that children (0-4 yrs) are the most recurring visitors (27,868 out of a population of all ages of 45,646) of the health clinics and that they suffer most from respiratory infections (59.9%), diarrhoea (23,1%) and malaria 15%.
d. Burden of disease related to environment in children

There are direct data with reference to environmental health threats to children’s health. Indirectly environmental health threats can be derived from morbidity and mortality from diseases as Dengue, Malaria, Diarrhoea, and respiratory infections.

**Dengue**

Of environmental health related diseases the table 6 is of interest, as it indicates that dengue is the lead cause of mortality from this category of diseases (61.5%)\(^1\). A total of 1582 patients were hospitalised for dengue (type I and II) during the epidemic in 1999-2000. Dengue epidemics are more and more prevalent, especially in the urban-coastal areas. Approximately one third of the dengue patients are children. Especially the younger children suffer from the dangerous complications of dengue.\(^2\) Table 7 shows the cumulative reported cases for the years 1998, 1999 and 2000.

Although preventive measures (improvement of solid waste management and reduction of breeding sites in and around the house) are easy to implement, the participation of the community is necessary. (see also Suriname dengue campaign on website www.fetidengue.org and www.paho.org/fetidengue). In the 2001 dengue epidemic, the Rotary Clubs in Paramaribo supported the dengue crash campaign by donating materials, equipment and management skills for a total value of US$400,000. One of the results of this support were the development of protocols and procedures to prevent and combat any future outbreak of dengue. This Dengue Draaiboek is presently being translated into English. However, the number of mosquito breeding sites in the domestic urban setting remains high due to inadequate solid waste collection, continuous illegal dumping, weak institutional capacity and still a lack of awareness by the general populace on mosquito breeding in and around their households. Periodically there are mass information campaigns (Krien kondre) to raise awareness of the population.

**Malaria**

Malaria showed a significant fluctuation and high of morbidity in the interior over that past 10 years. 2001 was a peak year of 11,647 cases under a registered population of 45,646 (API = 255). Resulting death were 15, 19 and 24 persons in 1998, 1999 and 2000 respectively.

The most important disease related to the environment for the interior is malaria. The behaviour factor is also important. That is why information and education are of great importance.

Malaria is a leading cause of death of children under age five in Suriname. It also contributes to anaemia in children and is a common cause of school absenteeism. Preventive measures, especially the use of mosquito nets treated with insecticide can dramatically reduce malaria mortality rates among children. Therefore information and education programs need to be expanded.

\(^1\) Causes of death in Suriname 2000, Bureau of Public Health(BOG)/ Epidemiology Dept. April 2002
\(^2\) Situation Analysis on children 2000
The MICS study revealed that though over 72% of the under five children slept under a bed net, most of the bed nets were not treated with insecticide. Only 5% of the bed nets used was impregnated with insecticide.

In combating malaria incidence the Medical Missions, with support from Rotary is training women groups in the manufacture and impregnation with permethrine (1% solution) of bed nets. Whenever a preventive programme is launched in the interior the health assistants are included to stimulate the local inhabitants to participate and to give information.

The deteriorating malaria situation is also affecting expectant mothers. Data show an increase of the number of indirect obstetric deaths due to malaria 1998-2000. 59% of malaria positives are from the Marowijne region.

**Acute Respiratory Infections (ARI’s)**

Acute lower respiratory infections, particularly pneumonia, are one of the leading causes of child deaths in Suriname. Children with acute respiratory infection as defined in the MICS study, are those who had an illness with a cough accompanied by rapid or difficult breathing and whose symptoms were due to a problem in the chest, or both a problem in the chest and a blocked nose, or whose mother did not know the source of the problem. Almost 58% of children with ARI were taken to an appropriate health provider (e.g. doctor, specialist, nurse, health assistant, and hospital).

The Regional Health Services reported 23,744 cases of acute respiratory infections and 19,926 in the year 2000. The Medical Mission reported that approximately 30-50% of the hinterland population visited the health centres for acute respiratory infection annually. In the year 2000, the Medical Mission reported 23,429 consults for respiratory infections. The Academic hospital discharges for acute respiratory infections greatly increased from 212 to 276 from 1999 to 2000. Infants compose 20% of these discharges due to ARIs. For the years 1997-1999 the mortality rate due to acute respiratory infections increased, then declined slightly in the year 2001. Acute respiratory infections are the leading cause of deaths in infants under the age of 1 year. Furthermore the people do not recognize the symptoms of a more serious complications resulting in pneumonia and other respiratory diseases. More information and education is necessary.

**Diarrhoea**

Diarrhoea prevalence was significantly higher in the interior than in other regions. Poor sanitary conditions and personal hygiene practises are the main cause of the high incidence of diarrhoea in the interior. There is a main misconception that children’s stool is benign and toddlers are allowed to defecate in and around the house.

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3Chief Medical Officer Report  
4 MICS 2001
Dehydration caused by diarrhea is a major cause of mortality among children in Suriname. Preventing dehydration and malnutrition by increasing fluid intake (ORS and recommended home fluids) and continuing to feed the child are also important strategies for managing diarrhea.

The MICS study also revealed that only 24.2% of children with diarrhea received increased fluids and continues eating as recommended. In the dry season there is an increase of cases of diarrhea. People tend to use water more economically, which results in less sanitation and more cases of diarrhoea.

Often mothers bring in the children late. First they tent to use their own homemade medicines (oso dresi’s). Children may then already severely dehydrated. There seem to be many germs in the water. Especially the diarrhea with blood is very dangerous.

Other

Pollution of the environment through the un-careful use of mercury in the gold industrial sector has gained a lot of attention from the government. Project proposals are being prepared to develop baseline data on the impacts from small scale goldmining on the health of the miners and the general population.

As far as diseases caused by mercury pollution there are incidental cases reported. The pollution of the river by mining activities is clearly visual (siltation), but mercury contamination through direct exposure and the food chain (fish) is less obvious and significant symptoms have not yet been examined scientifically. The medical mission does not register cases spontaneous abortion so a link with mercury pollution of the water cannot be investigated.

B. National Government Role

a. National Policies

The National Policy for Children (2002-2006), Ministry of Social Affairs, sets priorities for implementation of preventive measure to improve children’s health. Environment health issues (including malaria control and water & sanitation) are included.

The Ministry of Social Affairs and Housing is responsible for the monitoring and the implementation of this policy for children. In December 2002 an inter-departmental monitoring group was installed.

Under the section on health the following priorities are stated:

- Surveillance of diarrhea and other communicable diseases:
  1. Adequate staffing of the Unit Integrated Management of Childhood Diseases under the Bureau of Public Health.
  2. Implementation of the Basic Life Skills Programme.
  3. Development of protocols for therapy of most frequent communicable diseases of children and monitoring of these in the health sector.
4. Improvement of the water supply and sanitation in the urban, peri urban, rural areas and the interior.
5. Promoting of the use of impregnated mosquito nets in the interior.
6. Capacity building of staff of the health clinics for improvement of health education and sanitation.

- Stimulation of optimal health care for children 0-19 years
  1. Basic life skills programme
  2. School Health Programme

Government policy strives to make health care attainable and in reach of the total population, including children. The objective is a health care system which is easy accessible, affordable, sustainable and which is based on equity. Attainability means that health care centres are in the direct environment of communities. The centres should offer both preventive and curative care. Special attention is given to prenatal care, under five clinics, school health care. Government has appointed the Regional Health Service for health care in the rural areas and the Medical mission for health care in the interior. The School Health Program now monitors the health of an estimated 140,000 pupils from 236 primary schools in the urban and rural areas. Only the districts of Coronie and Nickerie are not reached yet.

The Bureau of Public Health is in charge of activating preventive health care and the monitoring of the public health programme.

The Bureau of Public Health includes the following departments:
- Epidemiology / Bio statistics
- Health Education
- Administrative Affairs
- Social Health care (Family health, Medical Pedagogic Bureau, Tuberculosis Program, National Immunization Program, Maternal and Child Health, Nutrition, School Health
- Environmental Hygiene (Environmental Inspection, Vector Control, Malaria control, Central Lab, Food Inspection).

The department Environment Inspection of the Bureau of Public Health has to control the sanitation around houses, day care centres and schools. A few years ago there was an initiative to appoint school children as environmental agents.

In 2002 PAHO also initiated a centennial project to obtain “100 smoke-free schools “ in the country. The Ministry of Education supported this project.

b. Health Sector

The health sector has compiled a basic health service package that should be attainable for every citizen. In that package health education and information, environmental health, sanitation, immunization, prevention of malaria and diarrhoea (that make many victims under children).
One of the key elements in the fight against malaria is the use of impregnated protective mosquito nets, which is promoted by the Ministry of Health. Also alternative ways of treatment with new chemo therapeutic regime are being researched (RAVEDRA project) to reduce the seven day treatment period, to increase the compliance rate, reduce side effects and reduce the chance of chemo resistance of the parasite.

**Major health events and developments in the past year.**

Major health events and developments in the past year were dengue, dengue shock syndrome and dengue hemorrhagic fever. Another problem is the increasing number of leptospirosis infections and in the interior malaria is still a problem. The perinatal and maternal mortality are currently monitored more closely than in the past.

In 1999 mass vaccination against measles, rubella and yellow fever took place. Yellow fever was introduced due to cases of yellow fever in the region (French Guyana and Brazil) and the frequent migration between countries, as well as the high Aedes Aegypti Index.

Many data collection, surveillance and health and management information systems improvements have contributed to the Chief medical Officer Report.

In the area of surveillance and information system much more needs to be done to be able to assess and monitor the health situation as a basis for action.

The IDB is financing eight studies concerning the health care in support of the health sector reform activities. These studies should reveal barriers and shortcomings in reaching the objectives.

Overall much more inter- and cross-sectoral activities in the form of education, programs and projects, monitoring, planning and implementation must take place to help prevent and decrease the burden of these diseases and illnesses which adversely affect the entire population. Preventable diseases must be controlled now before they become generalized health problems that can further complicate the already difficult socio-economic situation in Suriname.

**c: Environment sector**

A concept Environmental Act has been presented to the minister for the Environment in November 2002 for review before it will be presented to the State Council and subsequently will be presented to the National Assembly for approval.

Human health is not a component of this legislation and as such not specifically mentioned. The Environmental Act does not mention specific media such as water, air, food etc. It is intended as a Skeleton Law which covers rules and regulations for sustainable environmental management. Specific media will be covered by additional resolutions. It will also encompass earlier environmental related rules and regulations.

An Environmental Department has been added to the Ministry of Labour, Technology and the Environment (ATM). The National Environment Council (Nationale Milieu Raad, NMR))

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5 Chief Medical Officer Report 2000
reports to the Minister of ATM. The mandate of the NMR is to advise and develop on environmental policies on national level and the exercising of control in the implementation thereof. Its implementing agency is the National Institute of the Environment and Development Cooperation (NIMOS). This institute’s objectives: (a) to realize national environmental legislation interpreted in its broadest sense; (b) prepare and realise regulation regarding environmental protection; (c) coordinate and monitor compliance with those rules and regulations.

A revised Pesticides Act has been submitted and awaits approval for implementation. This act will allow better control of importation, labelling, use and disposal of pesticides. Although the Basel Convention on trans-boundary shipment of toxic and hazardous substances was signed, it was not ratified, making the removal, transport and destruction of toxic chemicals, e.g. PCB’s, in overseas treatment facilities impossible.

d. Education

Some of the opportunities for health and environmental education are:

- Environmental health education through elementary schools is already made acceptable in the school systems through the curriculum “nature education”. The initiative is now further extended by way of the Basic Life Skills program that adds new aspects of health life styles to the curriculum. This curriculum is now being revised in cooperation with Conservation International and the unit Curriculum development from the Ministry of Education, and the Basic Life Skills Team.
- An environmental or a health curriculum is taught from the 3rd grade on. The curriculum will now be expanded to include the first and second grade
- School attendance:
  - Approximately 78% of the children in Suriname are reached by the primary school program. In the urban and rural areas attendance is higher (respectively 81.6% and 81.9%) then in the interior (61.2%). There is virtually no difference between male and female primary school attendance.6
  - Attendance in the schools is required from 7 – 14 years of age. Many children in the urban and rural areas start attending school at the age of 4. In the interior opportunities for Kindergarten are scarce. Only 4.35% of the children < 7 years can enjoy some form of preschool education.

e. Other pertinent ministry/sector

Generally environmental issues are scattered over 21 departments from nine different ministries. Although the Ministry of Labor, Technology and the Environment (ATM) has now the overall mandate to prepare environmental policies in its widest sense, there is a general lack of coordination. Under the new Environmental Act an Inter-Ministerial Advice Committee (IMAC) will come into being with a mandate to coordinate all environmental issues. The ministries most likely to play a role in implementing a national action plan on children’s environmental health are:

6 MICS 2000
• the ministry of Labour, Technological Development and Environment (legislation),
• the ministry of Agriculture and Fishery (instruction on safe use of pesticides,
• the ministry of Education (environmental awareness in school curriculum),
• the ministry of Health (children’s health programs) and
• the ministry of Social Affairs (coordination of National Plan of Action on children’s well being).

Drafted legislation on environment is still in discussion at the Ministry of Labor, Technology and Environment. Other legislation with regard to environment needs to be revised and updated. E.g. legislation on subsoil water, legislation on waterworks, drafted legislation on mining.

The Ministry of Justice is working on the adaptation of the National Legislation to the Convention on the Rights of the Child (ratified in 1993).

The Ministry of Social Affairs is monitoring the National Policy on Children (see under a National Policies). The monitoring group consists of representatives of the following Ministries:
- Social Affairs and Housing (2)
- Education (1)
- Health (1)
- Justice (2)
- Regional Affairs (2)
- Labor, Technology and Environment (1)
- Planning and Developmental cooperation (1)

Also the Ministry of Social Affairs has planned to work on community level in the near future.

The Ministry of Regional Development (RO) coordinates several projects for the development of the interior. In its Districts Teams important key persons from several ministries are represented. Ministries of Health, Education, Agriculture, and R.O. and other important private organizations (Lobi Foundation and Medical Mission) and local administrators work closely together. The districts team functions on community level. Its most important tasks are sensitisation of the local population and disseminating information and capacity building of inhabitants according concepts of Sustainable Livelihood. The district team has an active role for the implementation of projects and to ensure active community participation. Resort comities are installed for the implementation of the projects.

The Community Development Fund Suriname (CDFS) is an IDB funded program under the Ministry of Regional Development (RO). This program facilitates and finances community development projects, including environmental health related project to improve sanitation and watersupply with a strong emphasis on community participation. Though there is no special policy on children, projects involving children are facilitated. Representatives of youth organizations covering many regions of the country are members of the board of CDFS.
C. ROLE OF SOCIETY

a. Communities
The Ministry of Regional Development, has a district team functioning in four districts which reports to the Ministry of R.O. (sector-coordinators)
In the District team important key figures of the area are represented:
Ministries of Health, Education, Agriculture, and R.O. and other important private organizations (Lobi Foundation and Medical Mission) and local administrators work closely together.

The Districts team functions on community level. Its most important tasks are sensitisation of the local population and disseminating information and capacity building of inhabitants. In case of project implementation the district team has an active role to see that people are involved. Resort comities are installed for the implementation of the projects. Sustainable Livelihoods is aimed for.

The District team does not have the ability to pass legislation. It mainly reports problems in that area to the responsible Ministry. It also has an advisory task.

Under the Ministry of Education, the Youth Department has a unit Youth Work. Their main task is to mobilize youth workers in the communities. They are active in the urban, peri-urban and rural area. In every community a number of youngsters function as contact for the Ministry. Through the contact person the youth in the community is informed about future activities. The Youth workers try to set up a local network of organisations in the community.
The main activities are:
  - Assistance with homework of children
  - Recreational activities
  - Informative sessions and fairs
  - Activities during the holidays
The implementation of the activities however is severely hampered by economical constraints.

b. Non-governmental organizations

NGO’s do play a significant role in building stakeholder input and public participation. Many NGO’s are active in the health sector, while many others are involved in environmental issue. Mother and Child health programs and projects are typical health initiatives focussing on children’s health, not specifically children’s environmental health.

The Forum NGO’s is a platform of non-governmental organizations working on diverse social and health programs both in urban areas and in the interior of the country. In the latter case with indigenous people and maroon societies. Children are not a specific focus but mothers and females are and through them children can be reached.

NGO’s can be instrumental in executing community programs on Children’s Environmental Health because of their wide spread network of participating CBO’s and NGO’s.
c. Academia

There are no existing academic institutions that promote children’s environmental health. Institutions that have developed initiatives with children with regard to environment are:

- PAHO
- Conservation International
- Foundation Clean Suriname

Other institutions that work with children, have shown interest and could play a role in the future are:

- The Bureau of Children’s Rights (Ministry of Social Affairs)
- Basic Life Skills Programme (Ministry of Education)
- Foundation Projects Protestant Christian Education
- Foundation for Human Development (BKO)

d. Private sector

There is a great interest from the larger and smaller private sector companies to contribute (financial and in kind) to projects that aim to improve developmental opportunities and environmental health and safety conditions for children, such as schools, playgrounds, sport facilities and educational campaigns.

Many programs and project receive funds from the private sector: such as Soul bodies, traffic wardens, traffic safety, mosquito netting, dengue education campaigns, school sanitation and watersupply projects, AIDS campaign, environmental curriculum development, and many other projects also outside the environmental health field. The largest soap manufacturer in Suriname supports now for many years personal hygiene education and awareness activities.

D. Science

a. State of the science in the country related to CEH

The team is not aware of any specific research in the area of Environmental Health for Children in Suriname. There are studies on children’s health and there are environmental studies, but such studies are not linked to express environmental factors to children’s health.

b. Capacity to conduct research

The institution that promotes science and research is the Anton de Kom University of Suriname (Medical Faculty). Institutions involved in research are the Academic Hospital and other private hospitals, but such research is not framed in institutional programs but on personal professional interest and carried out by individual medical professionals in these institutions, including Medical Mission and the Poison Center Suriname. Some of the findings of such research projects are being published in the Medical Bulletin of the Medical Faculty of the Anton de Kom University of Suriname. Most research in Suriname is financed on project to project bases, however, limited financing is available on programmatic (longer term) basis to support research.
at the university. Research implemented at hospitals or other facilities is funded on a non regular basis.

Those institutions that most likely are interested in research on children’s environmental health are the Medical Faculty of the Anton de Kom University of Suriname, Medical Mission and Poison Center Suriname. Also the pediatricians at the hospitals, allied in an association of pediatricians (Vakgroep van Kinderartsen) have expressed an interest in doing related research to children’s health.

The NGO Institute for Training and Research in Suriname (NIKOS) recently conducted an ILO commissioned rapid assessment on the worst cases of child labour. This assessment is a follow up on the 1998 survey (Ministry of Labour), which found that 2% of children between 4-14 years old are economically active. The ILO has not published the NIKOS study as yet, but the following data were made available. Based on several indicators it was estimated that about 300 children in Suriname will be involved in the Worst Forms of Child Labor (ILO definitions). The characteristics of this group are:

- 94% male, mostly 12 years and older and 52% Maroon
- they worked to support themselves rather than their family and 39% lived with one parent
- 58% not in school, 88% had repeated a class at least once
- 87% had a lower class background and 45% came from households with 5 to 7 members
- main jobs: gold mining, agriculture & fisheries, vending & hustling, construction work, transport and porter
- 94% earned more than U$ 2.30 a day

Children in the production sector complained about the circumstances in this sector. For instance, of those that said they had to always lift heavy weight during work 75% were active in this sector. Of those working with hazardous materials 65% were active in the production sector.

c. Research needs

Though the Anton de Kom University of Suriname resorts under the Ministry of Education, no research can formerly be requested from the University. The University has a separate budget and decides independently on research priorities.

Funding of research forms the greatest barrier. International organizations can help with funding and technical cooperation. The staff and capacity to conduct research are often lacking within the Ministry.

The Bureau of Public Health formerly organised research project to be implemented by University students from the Netherlands. Mostly it concerned laboratory research (parasitology) e.g. malaria. The environmental threats to children’s health and development have not been studied systematically yet. The Medical Faculty of the Anton de Kom University of Suriname has a Research Committee that advises on studies to be implemented. So far no advice to study environmental health has been given.
E. Data and Reporting

a. Information systems and centres

The National Health Information System (NHIS) is operational since 2001. The aim is to gather national health data. Momentarily the data 2000–2001 are being processed. (Biannual report of the Chief Medical Officer).

The Epidemiology Division of the Bureau of Public Health of the Ministry of Health collects and disseminates yearly morbidity and mortality data on selected diseases, including childhood diseases (i.e. diarrhea). Data from the four hospitals and clinics as well as the MM and RGD are being compiled. The regional primary health care providers, Regional Health Services (RGD) and the Medical Mission (MM) provide yearly reports to the Ministry of Health on the frequencies of selected diseases.

Child Indicators Monitoring System (CIMS 2000); The CIMS 2000 research was conducted to begin to address issues as established in the 1993 Convention on the Rights of the Child and the World Declaration on the Survival, Protection and Development of Children. CIMS is a compilation of data related to the welfare of families, specifically children, to serve a monitoring system of these important indicators. The system will provide a continuous flow of properly collected national data regarding child specific indicators. Data are compiled by the General Bureau of Statistics.

The General Bureau of Statistics serves as a national information centre. This Bureau issues the annual publication "Statistical Yearbook". It contains demographic data and some health issues. There is no focus on the environment. The Central Bureau of Civil Registration also publishes Demographic Data.

The Government does require reporting of childhood diseases associated with the national immunization program (polio, measles, pertussis, diphtheria). Information is gathered through the surveillance system established and maintained by the Bureau of Public Health: suspect cases are reported and confirmation takes place with support from the CAREC reference lab.

A Poisons Centre has been established as part of the Global Network of the IPCS, INTOX Program. At the moment the Centre is a Low Profile operation, managed on a part time basis by one person, a doctor in Human Toxicology. Calls are received mainly from the (medical) profession. The information from these calls are recorded in a harmonized manner using the IPCS INTOX software. Plans are underway to incorporate this centre in an established hospital with emergency facilities. The centre does also participate in the regional effort to strengthen poisons centre services in the Caribbean region.

Regular reports on disease and public health are:
- Country report for Health in the Americas
- Health System and Services Profile of Suriname
- Chief Medical Officers Report
- Various publications on morbidity and mortality by the Epidemiology division of the Bureau of Public Health (Epidemiological Data, Causes of Death etc.)
b. Data Quality

The PAHO representations are very much involved in data collection and in health and environmental health information systems. PAHO directly support the development of Health Information Systems. Also other UN agencies, i.e. UNICEF offices work on information collection as well. Data used by PAHO are assessed on quality and when in doubt these doubts are being expressed (i.e. read chapter on watersupply)

Other institutions that collect data on health, environment or status of children in the country are:

- The Ministry of Social Affairs is managing the Bureau for the Rights of the Child.
- This Ministry issued a MICS report (Multiple Indicator Cluster Survey).
- The General Bureau of Statistics issued a CIMS report (Child Indicator Monitoring System)
- There is a network on (Domestic) Violence against Children.
- The University of Suriname and some private research institutes also issue reports on the status of Children, e.g. Child Labor.

The barriers to data quality in Suriname are:

- Limited access to data sources
- Incomplete data collection, missing data
- Inconsistencies and lack of uniformity of data formats
- Gaps in continuity of data
- Doubtful reliability due to inconsistent data collection protocols and skills of data collectors (reliability
- Data not always representative because of inconsistency of sampling size, areas and target population
- Limited resources (skilled staff and equipment)

However, it must be stated that the reliability of data over the last few years has been increased, especially because of the active surveillance programs and projects earlier mentioned. Notably to mention are the new information systems of the Medical Mission and the Regional Health Services. The recently reported increase in certain morbidity and mortality data could be connected to improved data information reporting systems.

F. Communication

In the capital city and its not too distant perimeter the most effective way to disseminate information is either by TV, radio and newspaper in that order of priority. There is a marked difference in effective means of communications between urban, rural areas and the interior of the country. TV is not available and the availability of radio and newspaper in the interior is very limited.

The most effective means of disseminating information in the interior of the country is through village krutu’s (gatherings) where the captains, basja’s, village elders and all other key figures
are present and the information is communicated. There are also special sessions in which children, teachers and women can participate.

a. **Avenues of communication**

The Ministry of Regional Development, has a district team is functioning which reports to the

Some region’s can be reached by radio. Three radio station for the interior are operational: Radio Boskopo has a broader reach, Muje radio and one at Drietabbetje.

The most important and most successful way of communicating with the people in the village is by organizing a ‘krutu.’(gathering of all villagers). There the captains, basja’s, and the elders and all key figures are present and the information is communicated. Special sessions are also organized in which children, teachers, women can participate.

b. **Success Stories in Communication**

- **Health Promoting School Initiative**
  Description: This committee was established in Dec 2001 after the meeting in Barbados The purpose: Coordinate Health promoting school activities in Suriname. Joined the Caribbean Network of Health Promoting Schools

- **PET Recycling Project**
  Parties involved: Fernandez Bottling Company/PAHO/Vabi NV/ Environmental Union Suriname/ University of Suriname/ Boys scouts, DC
  Description: Plastic bottle recycling project in which schools (135), communities, Eating and Drinking Outlets, private companies are involved collecting Poly Ethylene Thereftalaat bottles for recycling. The bottles are being shuddered on the Fernandez bottling plant and used to make building block.
  Proj. status: Still running

- **100 Rook vrije Scholen In Suriname**
  Parties involved: PAHO/Min. Education/Min. Health/ Buro Alcohol and Drugs/ Romano Foundation, Media
  Description: To promote healthy learning environments for children the Healthy schools Committee (PAHO/Min. Education/Min. Health)
  Up till Dec. 2002 - 100 schools has been certified smoke free as part of PAHO centennial celebration. The HSC is now negotiating with the Minister of Education to develop policy to ban smoking in all educational institutions.
  Proj status: finished
• **Water and Sanitation Improvement Project Public Schools Helena Christina and Latour**  
Parties involved: PAHO/WHO, RGD, BOG, Inter-American Water Day Committee, many private sector companies.  
Description: To set an example and to start with a pilot towards a healthy school in water and sanitation, HC 1 and 2 was chosen by the Inter American Water day Committee to improve the water supply and Sanitation in this school. Strong focus community participation, self help concept, on hygiene education and maintenance of facilities  
Proj status: successful implemented, the school team now very motivated renovated the school fence 2001 together with the parents. HC 1+2 was in 2002 the first school which was certified smoke free by (Sir George Alleyne)

• **Water and Sanitation Improvement Project Public Schools**  
Parties involved: National Water day Committee, Community of Tamanredjo, Commewijne, PAHO  
Description: Improvement of the water supply and sanitation in OS 1 Tamanredjo public school (400 pupils) with a strong focus on community participation (self help concept or Gotong Rojong in Javanese) hygiene education and maintenance of facilities.  
Proj. Status: First phase (watersupply) successfully completed including, pahe two (sanitary facilities) being executed:

• **Clean Up the World Campaigns in Suriname (CUTW)**  
Parties involved: Environmental Union Suriname, PAHO, Private Sector: Suralco, Billiton, Indeco N.V. Ministry of Health, Ministry of Public Works, Foundation for a Clean Suriname, Media  
Description: To promote healthy communities and healthy places.  
Community- and youth leaders were trained how to mobilize the community and to set up Clean Ups in their neighbourhoods and remove bulky waste in a proper way.  
Project status: The first Clean up Campaign starts in 1993 and was celebrated yearly during the Clean up the World Weekend in September. At this moment schools are also involved in CUTW campaigns.

• **Health Education to Improve Quality of Life for Children, Youth and Families in Suriname (Soul Buddyz: Tomorrow is Ours)**  
Parties involved: PAHO, extensive number of NGO’s Ministry Representatives, private sector and community groups and media  
Description: the strategy of this project was to pilot test “Soul Buddyz: Tomorrow is ours” a high quality television program series for children aged 8-12 involved in a soap opera edutainment. This took place prior to the national airing of 26 episodes during the first half of 2002. Also a pre- and a post evaluation were designed to measure the impact on attitudes and behaviour change. Questions covering: media exposure, gender issues, child rights awareness, self-efficacy, HIV-AIDS and sexuality, trauma and accidents, discussions of issues and TV reach and receptions.  
Proj. status: 26 episodes are now aired for the 4th time
• Conservation International has developed several initiatives with basic school children to raise awareness of bio diversity, protection of environment and prevention of diseases and pollution. Now that the methodology is developed funding is necessary to expand the initiative and reach more schools.
  - Trips in the district of Para (Zanderij) by way of an outlined activity route
  - Twin project in which children of a school from the peri urban area and one of Brokopondo are brought together to learn about the environment, have workshops to prevent environmental pollution and inform other children from their community.
  - In close cooperation with the Ministry of Education (Curriculum development) and the Basic Life Skills group the curriculum on Nature and environment is reviewed and adapted. But also adaptations with regard to health and environment are made in the curricula of Geography and History.

G: CONCLUSIONS

There is demonstrated good interest in many layers of society, including government, NGO’s, private sector and the international community, to improve environmental conditions and the health of children.

However, the institutional capacity to develop and implement policies and plans needs strengthening. The lack of coordination of scattered responsibilities, limited and un-linked data and information bases on environmental related aspects, weak legislative framework, poor land-use planning, all contribute to haphazard and retro-active (fire-fighting) responses to preventable and unnecessary negative impacts on the health of the general population, especially children.

Our team in Suriname strongly recommends strengthening and coordination of the institutional capacity and welcomes the approach to focus on the development and implementation of policies and plans to improve the environmental health of children.

We believe that community based projects with a strong self help concepts and private and public sector collaboration could effectively improve the conditions in which children develop, play and learn. Focus on school environment will naturally bring together the teachers, parents and students, community, parents, governments and NGO’s, the private sector and the international community as was clearly demonstrated in several school improvement projects in Suriname.

Key barriers are the dispersed responsibilities, poor legislative framework and land-use planning. These issues need to be address on the highest political level. Another problem is a general lack of conceptual understanding of the intertwined relationship between environment and health and development. This lack of understanding is present in all sectors. Therefore, inclusion of this concept in school improvement programs and projects will educate the young population and thus the future policymakers, so they will be able to shape the future and improve healthy environments.
Map of Suriname

<table>
<thead>
<tr>
<th>No</th>
<th>District</th>
<th>Area (km²)</th>
<th>No</th>
<th>District</th>
<th>Area (km²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>Wanica</td>
<td>443</td>
<td>7.</td>
<td>Coronie</td>
<td>3,902</td>
</tr>
<tr>
<td>3.</td>
<td>Para</td>
<td>5,393</td>
<td>8.</td>
<td>Nickerie</td>
<td>5,353</td>
</tr>
<tr>
<td>5.</td>
<td>Commewijne</td>
<td>2,353</td>
<td>10.</td>
<td>Sipaliwini</td>
<td>130,566</td>
</tr>
</tbody>
</table>
Table 1: Key causes of infant and under-five mortality/morbidity Indicators

<table>
<thead>
<tr>
<th></th>
<th>1998</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td># Foetal deaths of 22 weeks or more gestation</td>
<td>228</td>
<td>260</td>
</tr>
<tr>
<td>Total births</td>
<td>10,449</td>
<td>10,064</td>
</tr>
<tr>
<td>Live births</td>
<td>10,221</td>
<td>9,804</td>
</tr>
<tr>
<td><strong>Birth rate (per 1,000 pop.)</strong></td>
<td><strong>24.1</strong></td>
<td><strong>22.5</strong></td>
</tr>
<tr>
<td>Still births</td>
<td>228</td>
<td>260</td>
</tr>
<tr>
<td><strong>Still birth rate (per 1,000 total Births)</strong></td>
<td><strong>22.3</strong></td>
<td><strong>25.8</strong></td>
</tr>
<tr>
<td>Infant Deaths</td>
<td>163</td>
<td>175</td>
</tr>
<tr>
<td><strong>Infant death rate (per 1,000 live birth)</strong></td>
<td><strong>15.9</strong></td>
<td><strong>17.8</strong></td>
</tr>
<tr>
<td>Perinatal deaths</td>
<td>334</td>
<td>386</td>
</tr>
<tr>
<td><strong>Perinatal death rate (per 1,000 total births)</strong></td>
<td><strong>32.7</strong></td>
<td><strong>38.4</strong></td>
</tr>
<tr>
<td>Neonatal deaths</td>
<td>92</td>
<td>146</td>
</tr>
<tr>
<td>Neonatal death rate (per 1,000 live births)</td>
<td>9.0</td>
<td>14.9</td>
</tr>
<tr>
<td>Deaths in children 1-4 yrs</td>
<td>79</td>
<td>73</td>
</tr>
<tr>
<td>Maternal deaths</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td><strong>Maternal death rate (per 1,000 live births)</strong></td>
<td><strong>0.88</strong></td>
<td><strong>1.53</strong></td>
</tr>
</tbody>
</table>

Table 2: Top five causes of illness and death for children under 1 (2000)

<table>
<thead>
<tr>
<th>Cause</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perinatal death (&lt; 7 days after birth)</td>
<td>45</td>
<td>43</td>
</tr>
<tr>
<td>Congenital anomalies</td>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td>Intestinal infectious diseases</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>External causes</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Acute respiratory infections</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 3: Top five causes of illness and death for children under 5

<table>
<thead>
<tr>
<th>Cause of death</th>
<th>Males 1-4 years</th>
<th>Cause of death</th>
<th>Females 1-4 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>External causes</td>
<td>10</td>
<td>External causes</td>
<td>9</td>
</tr>
<tr>
<td>Intestinal infectious diseases</td>
<td>4</td>
<td>Vector born diseases</td>
<td>4</td>
</tr>
<tr>
<td>Acute respiratory infections</td>
<td>4</td>
<td>Intestinal infectious diseases</td>
<td>4</td>
</tr>
<tr>
<td>Meningitis</td>
<td>3</td>
<td>Chronic respiratory infections</td>
<td>3</td>
</tr>
<tr>
<td>Malnutrition</td>
<td>3</td>
<td>Acute respiratory infections</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sepsis</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>Total</td>
<td>26</td>
</tr>
</tbody>
</table>

7 Chief Medical Officer report
Table 4: Top five causes of illness and death for children under 19

<table>
<thead>
<tr>
<th>Cause of death</th>
<th>Males 5-19</th>
<th>Cause of death</th>
<th>Females 5-19</th>
</tr>
</thead>
<tbody>
<tr>
<td>External causes</td>
<td>28</td>
<td>External causes</td>
<td>10</td>
</tr>
<tr>
<td>Neoplasm</td>
<td>6</td>
<td>HIV/Aids</td>
<td>3</td>
</tr>
<tr>
<td>Certain Vector born diseases</td>
<td>3</td>
<td>Certain Vector born diseases</td>
<td>3</td>
</tr>
<tr>
<td>Cerebra vascular diseases</td>
<td>3</td>
<td>Cerebra vascular diseases</td>
<td>2</td>
</tr>
<tr>
<td>Acute respiratory infections</td>
<td>1</td>
<td>Acute respiratory infections</td>
<td>1</td>
</tr>
<tr>
<td>Maternity</td>
<td></td>
<td>Maternity</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td>Total</td>
<td>20</td>
</tr>
</tbody>
</table>

Table 5: Morbidity of data interior

<table>
<thead>
<tr>
<th>Condition</th>
<th>0-4 years</th>
<th>5 years and older</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Respiratory infections</td>
<td>12,998</td>
<td>10,705</td>
</tr>
<tr>
<td>Lower Respiratory infections</td>
<td>3,696</td>
<td>2,277</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>4,627</td>
<td>2,555</td>
</tr>
<tr>
<td>Diarrhea with blood or mucus</td>
<td>1,811</td>
<td>1,539</td>
</tr>
<tr>
<td>Suspected malaria</td>
<td>4,163</td>
<td>9,093</td>
</tr>
<tr>
<td>Trauma (Accidents)</td>
<td>418</td>
<td>1,474</td>
</tr>
<tr>
<td>Trauma (Violence)</td>
<td>71</td>
<td>171</td>
</tr>
<tr>
<td>Fever with rash</td>
<td>84</td>
<td>93</td>
</tr>
<tr>
<td>Secretion</td>
<td>288</td>
<td>475</td>
</tr>
<tr>
<td>Genital Ulcus</td>
<td>42</td>
<td>58</td>
</tr>
<tr>
<td>Warts</td>
<td>6</td>
<td>23</td>
</tr>
</tbody>
</table>

Table 6: Environmental Health related mortality (2000)

<table>
<thead>
<tr>
<th>Disease</th>
<th>Cases</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dengue</td>
<td>16</td>
<td>61.5%</td>
</tr>
<tr>
<td>Leptospirosis</td>
<td>5</td>
<td>19.2%</td>
</tr>
<tr>
<td>Tetanus (except neonatal)</td>
<td>1</td>
<td>3.8%</td>
</tr>
<tr>
<td>Salmonella and Typhoid</td>
<td>1</td>
<td>3.8%</td>
</tr>
<tr>
<td>Shigella</td>
<td>3</td>
<td>11.5%</td>
</tr>
<tr>
<td>Total</td>
<td>26</td>
<td>100%</td>
</tr>
</tbody>
</table>

---

8 Medical Mission, 2002
Table 7: Reported cases of Dengue\textsuperscript{9} Cumulative Total for the year

<table>
<thead>
<tr>
<th></th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dengue Fever Lab confirmed</td>
<td>495</td>
<td>691</td>
<td>1093</td>
</tr>
<tr>
<td></td>
<td>149</td>
<td>145</td>
<td>112</td>
</tr>
<tr>
<td>Dengue Haemorrhage Fever/ Shock syndrome</td>
<td>60</td>
<td>69</td>
<td>85</td>
</tr>
</tbody>
</table>

Graph 1: Malaria cases in interior of Suriname, 1992-2001 (population of 45,646, 2001)

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\textsuperscript{9} Chief Medical Officer Report