

REPORT ON WATER INSECURITY AND FOOD INSECURITY BETWEEN THE XIKRIN OF THE INDIGENOUS TERRA CATETÉ, THE INDIGENOUS ASSOCIATIONS POREKRÔ, KAKAREKRÉ AND BAYPRÃ, ON THE RISK OF ETNOCIDE, AND A SPREAD GROUP IN A DESPERATE SITUATION IN THE 1960'S, with a CURRENT INDIGENOUS POPULATION of 1606 INDIVIDUALS.

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## WATER INSECURITY AND FOOD INSECURITY AMONG THE XIKRIN OF THE CATETÉ INDIGENOUS LAND

The two main rivers of the Cateté Indigenous Territory, the Cateté and Itacaiúnas rivers, are visibly polluted by heavy metals, lead, cadmium, iron, copper, chromium, manganese and nickel, with proof of dosages in sludge and water. The consequences are terrible for the Indians, so I expose the diseases they cause.

I initially tried the dosages of heavy metals by an experienced team from the Federal University of São Paulo to which I belong, but the payment and service conditions indicated in a private laboratory were difficult to resolve, so I transferred the samples to Professor Reginaldo Saboia de Paiva of the University Federal of Pará. The Xikrin signed and provided fingerprints requesting the dosages several years ago.

PROFESSOR Sabóia brought a VAN transport team to dose the metals present in the Indians, who were in the Caldeirão harvesting chestnuts near the Cateté River in 2020. He found that 49 Xikrin Indians examined with samples of blood and hair collected were contaminated by heavy metals, especially Lead from mining at VALE, Mercury from fish from Aurilândia that are displayed in tables. All infected Indians will be able to go to court to be compensated. Companhia VALE continues to contaminate the rivers and creeks of the Cateté Indigenous Land, refusing to accept the contamination with its tailings from the Onça-Puma and 11D Eliezer Batista mills thrown by clandestine pipes. The daily activities of bathing, washing clothes, fishing and hunting are closely linked to the rivers and streams. The Xikrin drink water from the Cateté and Itacaiúnas rivers contaminated by heavy metals from the Onça-Puma and 11D

Eliezer Batista mills, when they go fishing, hunting or in baths to refresh their body temperature, when the villages lack energy to pump water from semi-artesian wells and use water from rivers.

The terms of acceptance of VALE's proposals by the Indians, accepting large and considerable amounts of money, are tempting for the Indians, in which the court decisions against VALE are postponed in favor of the mining company. The pollution caused by VALE with its mineral tailings in the Cateté and Itacaiúnas rivers, vital for the survival of the Xikrin, compromised the health of the Xikrin, caused the disappearance of butterflies on the banks of the rivers looking for food on the ground, the disappearance of so many tadpoles, nocturnal animals with their vocalization, the disappearance of capybaras near the Djudjê-Kô village. Bats so numerous in the past before the pollution have drastically decreased and are seen colliding with the SESAI ambulance in Djudjê-Kô, dying, probably from their compromised sonar. The "E" nature index of the VALE Company is negatively compromised.

VALE's "G" index is committed to offering large amounts to the Xikrin, negative as the current Governance.

During my stay among the Xikrin of the Cateté village, after the clinical examinations that are so highly valued by this doctor, men, women and children left for the fishing season on the Itacaiúnas River, polluted by the 11D Eliezer Batista Plant. They were eating fish contaminated with heavy metals in places where they were still present and, due to the distance, they drank water from the Itacaiúnas River.

The monitoring of the contamination of the Cateté, Itacaiúnas, Igarapés and other rivers, such as Salobo, should proceed with Professor Reginaldo Sabóia de Paiva of the Federal University of Pará, without conflicts of interest with VALE. It has costs that must be from Indigenous Associations and Legal Conditioning. If there is no monitoring of the contamination of heavy metals released into the Cateté and Itacaiúnas rivers by VALE, the water contamination situation will remain in favor of the VALE Company, to the disadvantage of the riverside population of the cities of Parauapebas and Marabá, as these waters are contaminated. they proceed in these directions.

The Brazilian Constitution guarantees water and health for the Brazilian population, which must be complied with.

The Xikrin from the Cateté, Djudjê-Kô and Oodjã villages began to soak the cassava roots to soften in barrels, as the flour obtained from the roots softened

in the rivers had a bad taste of heavy metals, Lead, already found in cassava flour by Professor Savoy. Roots soaked in vats are not as detoxified from hydrocyanic acid, unlike roots in running river water washed by indigenous custom. The result is that countless women and men are not eating the manioc flour from their basic and traditional diet, accusing gastric pain, forcing me to order 45 stomach endoscopies in the Cateté village, 27 in the Djudjê-Kô village and 4 in the village Oodja. Previous endoscopies showed mostly enanthematous gastritis, polyps, an invasive gastric cancer, presence of Helicobacter pylori. Cassava flour from the traditional diet is being discontinued, to the detriment of the Indians, who are buying industrialized foods with the appearance of more cases of obesity, hypertension and type 2 diabetes mellitus.

The Xikrin are walking and being led by the VALE Company with negative "E" nature index, "S" Social and "G" Governance negative, for the Silent and Chemical or Mineral Ethnocide with the continuous deposition of heavy metals in their bodies.

Large international investors or large developers investing their capital must pay attention to the behavior of the VALE Company, with antecedents of the Mariana and Brumadinho disasters compromising the nature of Brazil and the world. I ask where the VALE Company's Green Bond certificate can be found. VALE needs Governance focused on the future and not only with immediate profits. Modern and more expensive technology will be required from VALE.

The VALE Company interfered in the Social "S" index of the Xikrin, which were subdivided into 10 new encampments or villages. There are currently three old villages with care infrastructure and semi-artesian wells, Cateté, Djudjê-Kô and Oodjã and

10 new camps or villages without any assistance infrastructure and lack of drinking water.

A new village on the Kran-Kro-Kró or Seco river is due to the Tunire leader whose granddaughter came to have systemic lupus, possibly related to immunosuppressive heavy metals, fleeing the contaminated Cateté river. The Seco River runs out of water in summer. Another village in Tekore went to a place without water, close to a grotto that dries up in summer, with sick people in need of permanent assistance, such as new villages or camps. I found insulin-dependent diabetics such as Nhokon ☹️, Kukran-ê ☹️, Koronhoro ☹️, Iaramoro ☹️, without anyone to assist them such as AIS, AISAN and nursing technicians. I advised the elderly diabetics to return to the village of Cateté.

There are no conditions for nursing technicians to remain in these follow-ups, which the Indians designate as new villages.

Kamondjá with Parkison's illness, suspected of contamination by Heavy Metal, Manganese, also went to a new Kamet-Kore camp.

The Xikrin are abandoning the villages of Cateté, Djudjê-Kô, Oodjâ to distant places and without any infrastructure, without water from semi-artesian wells, with contaminated water or water from drains that dry up in the summer. Gastroenteritis already manifests itself in the Cateté village with a certain restriction in the use of water compared to the past, when they used water from the river Cateté frequently.

These occurrences are due to the performance of Companhia VALE with a negative "S" Social index and "G" Negative Governance offering considerable money to the Indians when pressured or not to solve the heavy metal pollution from their mining in the Cateté and Itacaiúnas rivers.

The Cateté and Djudjê-Kô villages with assistance infrastructure, well-presented schools, covered stadiums for sports, are being abandoned.

Large parties inaugurated by new leaders and evangelical religious events with 500 guests from other Indigenous Lands are held and funded by the Municipality of Parauapebas 100% with tents and modern singers and stages, presence of civilized people from Western culture, several school buses bringing

Indians invited and I even noticed a tourist bus from S. Felix do Xingu, in the midst of the COVID 19 pandemic.

In the Cateté village with 623 indigenous people on the banks of the Cateté river, in the Pokrô follow-up with 23 indigenous people on the banks of the Cateté river, in the KankroKrô camp on the banks of the Seco river with 38 indigenous people and the only one not polluted by heavy metals from VALE, I have consulted :

14 insulin-dependent diabetic women;

4 insulin-dependent diabetic men;

28 diabetic women using glyphage XR500 or DPP4 inhibitors;

2 men using glyphage XR or diabetic DPP4 inhibitors.

We know that heavy metals can contribute to obesity and diabetes mellitus.

In the village of Cateté and its camps, there are 18 hypertensive patients I consulted.

There is a second young man, Piore, with severe nephropathy. We know that heavy metals can cause nephropathy.

There is a pregnant young woman, Kokonotore, with eclampsia, hypertension and nephropathy. We know that heavy metals cause kidney disease.

There is an Indian with lower limb tremors, Kukuiakati. Manganese causes magnanimity with tremors.

Two young women, Negrei-ó and Tegogore, with stomach pain like countless Xikrin who ask me for endoscopies, presented stomach polyps, precancerous lesions. Kokoiú presented stomach cancer. We know that heavy metals are cancer inducers.

In the Djudjê-Kô village on the banks of the Cateté river with 404 indigenous people, in the Krimex camp on the banks of the Cateté river with 82 indigenous people, in the Pratinhõpuru encampment on the banks of the Cateté river with 25 indigenous people, in the Kamet-Kore camp with 53 indigenous people on the riverbank Cateté, there are consulted by me:

7 diabetic women using insulin;

1 diabetic man using insulin;

2 diabetic women using glyphage XR or DPP4 inhibitors; 2 diabetic men using glyphage XR or DPP4 inhibitors.

We know from the medical literature that heavy metals are diabetes and obesity inducers so present among the Xikrin. Heavy metals are also hormonal disruptors.

In the Oodjã village on the banks of the Itacaiúnas river with 150 indigenous people, there are consulted by me:

2 insulin-dependent diabetic men; 1 insulin-dependent diabetic woman;

1 diabetic woman using metformin;

2 hypertensive women;

1 hypertensive man;

1 man with severe headache with brain MRI without cancer who prescribed sodium valproate;

1 woman with severe headache using sodium valproate and amitriptyline.

Headaches among Xikrim men and women are frequent, requiring X-rays, which suggests heavy metal such as Lead, which may already be manifested by continuous deposition in their bodies. Professor Sabóia found the Lead present and elevated among the 49 Indians in which the metal was dosed.

Daily morning and evening NPH insulins should be replaced by Glargine or Lantus insulin only in the morning with the NPH dose used in the morning, if possible. Insulin Glargine or Lantus must be purchased by Indigenous Associations.

In the Oodjã village there is an obese 10-year-old Benhukanroti boy, weighing 81 kilos and measuring 1 meter and 47 centimeters, and whose blood glucose is still normal, which is often in the polluted Itacaiúnas river, which suggests induction of weight gain by heavy metals .

The Xikrin are overweight, especially women. There are Xikrin men over 100 kilos.

There are mainly women and some men with osteoporosis of older age with thinness, aggravated by the lack of calcium in the absence of fish, for which I prescribed monoclonal antibody, denosumab, prolia every 6 months, against fractures and oral calcium to be purchased by the Indigenous Associations .

In the food baskets distributed to the Xikrin during the Covid 19 epidemic by the Municipality of Parauapebas and FUNAI, there were sugar, pasta, oil, Mabel biscuits, industrialized tomato extract, and salt.

The Government's food baskets are inappropriate for indigenous people with genetics for obesity and type 2 diabetes mellitus. These food baskets and school lunches follow the scheme of the non-indigenous Brazilian population with foods rich in fast-absorbing carbohydrates and saturated fats, untimely and harmful to indigenous people. They must be reformulated and valued to the Brazilian Indians with their traditional diet that provided valuable foods to the world such as potatoes, corn, pumpkin, cassava, beans and broad beans, yam, papaya, pineapple and many others .

In the case of the Xikrin with Food Insecurity due to the lack of fish in their basic diet, contaminated animals, water polluted by the heavy metals of the VALE Company, return the Water Courses of their Indigenous Land clean from heavy metals.

#### PATHOLOGIES CAUSED BY IRON IN THE SLUDGE AND WATER OF THE CATETÉ RIVER ABOVE THE LEVEL RECOMMENDED BY CONAMA (NATIONAL ENVIRONMENT COUNCIL)

Carcinogenesis or cancers of the liver, lung, stomach, colorectal bowel.

Haemosiderosis or iron deposition in the liver, heart, endocrine glands (hypopituitarism or pituitary hormone insufficiency, pancreatic diabetes).

Osteoporosis by inhibiting bone tissue-forming osteoblasts. Friedreich's ataxia, central neurological disease.

Degeneration of the macula with final blindness. 4 women operated on for cataract without visual benefit in the Cateté village.

Cataracts with decreased vision.

Oxidative stress and immune responses with excessive weight gain.

Endocrine disruption with increased fat tissue. In the 2018 report I described numerous cases of obesity over 90 and some 100 pounds.

## PATHOLOGIES CAUSED BY NICKEL IN THE SLUDGE AND WATER OF THE CATETÉ RIVER ABOVE THE LEVEL RECOMMENDED BY CONAMA

Carcinogenesis or formation of cancers in the lungs and nasal mucosa. Genotoxicity in the cells of the mouth or mouth.

DNA repair damage

Malformations.

Skin irritation with allergic dermatitis. Okampuka came out of the bath in the river Cateté with intense allergic dermatitis, having to be treated with steroids.

Mucosal irritation (conjunctivitis). Countless Indians come out of the bath in the river Cateté with extremely irritated and red eye conjunctiva.

Immunosuppression. Endocrine disruption.

## EXCESS MANGANESE IN THE ENVIRONMENT AND CAUSED DISEASES

- Neurotoxicity in children and adults due to excess manganese in the environment from waste discarded by mining. Contamination of air, water and soil.

- Neuropsychological and cognitive impairment in children from Ohio, United States, due to manganese particles, especially in the air and water of residents close to manganese exploration.

- Neurogenesis or formation of compromised nervous tissue, oxidative stress, microglial activation and inflammation by the emission of manganese into the environment, air, soil and tap water, due to the three ferroalloys operating from 1902 to 2001 in the Province of Brescia, Italy. Possible discards compromising motor coordination and cognitive skills, high prevalence of Parkinsonism.

- Increased prevalence of Parkinsonism among adolescents aged 11 to 14 years and significant impairment of motor coordination. Intense tremors associated with contaminated soil. Increased manganese in soil and hair.

- Neurological disorders similar to Parkinsonism, accumulation of manganese in the basal nucleus on MRI, with greater vulnerability in young people. Impairment of cognition and executive function due to cerebral cortex involvement. Treatment with removal of exposure to manganese although symptoms are usually irreversible.

- Manganism caused by exposure to high concentrations of manganese, psychological emotional disorders, Parkinson's disease motor disorders, impaired gait, tremors, rigidity and bradykinesia or slow movements. There is a 57-year-old Indian with lower limb tremors in Cateté (Kukoiapati) and a 68-year-old Indian with Parkinson's disease who had the disease for 10 months (Kamondjá).

- Reduced perception, reduced reasoning and working memory, impaired verbal comprehension, emotional lability, marked abnormality in gait or walking in Bangladesh, due to excess manganese in the environment.
- Polymorphism such as ATP13 A2 from hereditary DNA representing a risk for the neurotoxic effects of excess manganese among humans.
- High concentration of manganese in deep well water in North Carolina, USA, and in piped water from 600 Bangladeshi villages with high infant mortality.
- High concentration of manganese in the leaf tissue of three plant species *Pandanus tectorius* from the south of the island of Guam, with a possible link between the fibers of these plants used domestically with the occupational degenerative disease of manganism.
- Hormonal dysregulation or disruption with alteration of the hormone prolactin, triggering breastfeeding, due to the toxicity of manganese in the dopaminergic system.
- Neurotoxicity of the manganese contained in the drug Cocktail Russo used by young people aged 15 to 19 years with extrapyramidal abnormalities and movement disorders. MRI brain imaging with hyperintensity images of the dentate nucleus, globus pallidus, and putamen. Treatment with EDTA, levodopa and paraminosalicylic acid with reduced blood manganese and subjective improvement.

LEAD IN THE ENVIRONMENT, IN THE CASSAVA FLOUR OF THE XIKRIN INDIGENOUS TERRA INDIGENOUS CATETÉ, FROM THE SLUDGE OF THE RIO CATETÉ IN THE VILLAGES CATETÉ AND DJUDJÊ-KÔ AND THE SLUDGE OF THE RIVER ITACAIÚNAS IN THE ALDEIA RELATORJÓ STATE IN PALDEIA RELATINÓ RIO DE SA. 2018

Diseases and organic alterations caused by heavy metal Lead from the Onça-Puma Plant of Companhia VALE.

- Lead is associated with death from all causes, cardiovascular disease, cancer, with blood concentrations as low as between 5 and 9 ug/dl according to the US National Health and Nutrition Examination Survey (NHANES III) (10) .
- Lead is carcinogenic or promoter of cancers with death (10). One Xikrin from Cateté village has stomach cancer (Morotiô) and another had thyroid cancer (Kokou), 1 girl aged 8 was operated on for malignant brain medulloblastoma, 1 Indian has a vegetating bowel tumor in the sigmoid (Piurenhoró).
- Lead is highly toxic and damages the nervous system, impairs cognition (1,10). Countless Indians present dizziness with permanent medication.
- Lead compromises children's brain development, even in small exposures (1).

- The number of Xikrin Indians with headache or chronic headache is marked and described in my annual reports, requiring daily medication. 19 had cerebral dysrhythmia in my 2018 report awaiting lead dosage.

- Lead causes cardiovascular disease and peripheral arterial disease (10), atherosclerosis, coronary heart disease, stroke (6).

- Lead causes high blood pressure (10). I described in my 2018 report, 21 cases of high blood pressure among the Xikrin. High blood lead contents are prone to higher serum cholesterol and high level of hypertension and diabetes (6).

- Lead causes renal dysfunction (9). Two diabetic women Xikrin died after kidney dialysis in a short time, a young man died of severe kidney failure in the Djudjê-Kô village, a child underwent kidney dialysis and kidney transplantation in São Paulo due to kidney failure, from the Cateté village where the women came from who died.

- Lead is a chemical endocrine disruptor or disruptor that promotes thyroid disease with elevated antithyroid antibodies in the blood (6). A child from the Djudjê-Kô village was born with congenital hypothyroidism due to a lack of thyroid tissue. Other women had thyroid nodules, one of whom had thyroid cancer.

- Lead is a chemical endocrine disruptor of the hypothalamus-pituitary adrenal axis (12).

- Lead is a chemical endocrine disruptor of sex hormones (2).

- Lead was positively associated with increased body weight and genetic risk of adiposity in a population in China (8).

- Lead promotes changes in hereditary DNA by hypermethylation, contributing to body weight gain (3,11).

- Lead is an endocrine disruptor that causes a rapid increase in metabolic diseases such as non-alcoholic fatty liver disease (13) which is expanding among the Xikrin.

- Lead is a chemical endocrine disruptor that causes a rapid increase in the number of obese people due to its obesogenic effect (5,13). Among the adult Xikrin population, there are numerous overweight and obese individuals weighing more than 100kg, with the onset of obesity among children being observed.

- Lead causes neurotoxicity of brain function, altering obesity-related appetite and satiety (1,4,9).

- The intestinal microbiota (intestinal flora) protects health and is altered by

heavy metals, with a relationship between the microbiota and type 2 diabetes mellitus, weight gain and heart ischemia (15). There are numerous cases of type 2 diabetes mellitus among the Xikrin, some using insulin. 28 cases of diabetes mellitus were being treated in 2018.

Other heavy metals such as iron, copper, chromium, nickel, zinc, manganese, cadmium have already been found at worrying levels by professor Reginaldo Sabóia de Paiva of the Federal University of Pará, above those recommended by CONAMA in the water of the Cateté and Itacaiúnas rivers, the which causes us great concern for the daily and cumulative deposition in the organisms of the Xikrin Indians.

The immediate interruption of the commitment to the health of the Indians is necessary given the poor location of the Onça Puma Plant so close to the Cateté river, built and production started without the environmental RIMA. The interruption by the release of heavy metals through the pipelines directed in the Cateté and Itacaiúnas rivers, by the Onça Puma and S11D Eliezer Batista plants, must be analyzed by the Judiciary Power in accordance with the Brazilian Constitution for the protection of its populations.

Uncontaminated water is life and a public good. Contaminated water is death for humans, flora and animal life.

#### VALE'S INDEPENDENT MONITORING AND CONTROL WORK, BY THE FEDERAL UNIVERSITY OF PARÁ, BY PROFESSOR SABÓIA

If there is no independent monitoring of heavy metals in the bodies of the Xikrin and in the water of the Cateté, Itacaiúnas and streams like the Salobo, the Xikrin Indians will be lost with consummate Ethnocide.

From the information I received, the VALE Company is trying to convince the Indians that it will have to control heavy metals in the rivers of the Cateté Indigenous Territory. If VALE is responsible for the dosage of metals, pollution will continue, as VALE's "G" Governance is solely aimed at profits. If the Company had been interested in nature "E", the disasters of Mariana and Brumadinho would not have happened.

If VALE puts pressure on the Indians against the doses and work of Professor Sabóia, it will be condemning the Indians to death. Heavy metals are already accumulating in Xikrin bodies with the risk of numerous diseases. Xikrin's severe headaches and gastric diseases with precancerous lesions are already present. Heavy metals must be dosed and monitored in the bodies of the Xikrin Indians, who must be compensated by VALE as long as there is metal in their bodies.

If the Indians were to die due to the absence of an entity independent of VALE,

there would be those who could accuse it of a crime against their homeland. Heavy metals are already in the bodies of the Indians and what is needed is the interruption of the release of tailings from the Onça-Puma Mine into the Cateté River, the treatment of effluents in several stages and not just the first stage. VALE must carry out a differentiated treatment of effluents and not stick to the first phase only, for economic reasons or not wanting to spend. VALE tries to stop independent monitoring to close the Processes. Lip and eyelid angiodemas are frequent among the Xikrin who come out from bathing in rivers, as well as itching in the body, in which Nickel must be the cause. Requests for examination by an ophthalmologist due to decreased vision increased. The cataracts increased and four women who underwent cataract surgery could not see again due to macular degeneration. Iron can cause cataracts and macular degeneration.

#### CURRENT SILENT ETNOCIDES PROMOTED BY MINING AMONG THE XIKRIN

In the analysis of heavy metals, chemical elements in the organisms of 49 Xikrin indigenous people, in hair and blood, Professor Reginaldo Sabóia de Paiva of the Federal University of Pará found increased toxic elements such as Mercury and Lead, above all, Aluminum, Barium, Bismuth, Manganese .

Professor Sabóia found in these 49 Xikrin Indians from the Cateté Indigenous Land, mostly female with greater contact with rivers, contaminated by essential metal elements such as Phosphorus, Magnesium, Sodium, Potassium. Iron, Manganese, Silicon and Nickel, values increased.

He found excess heavy metals present in Xikrin organisms such as Lead, Mercury, Aluminum, Barium, Bismuth, Titanium.

See the exposed tables.

The problem of contamination of the Xikrin Indians is so serious that during the rainy season the water from the Cateté River flooded the terrain of the semi-artesian wells in the Djúdjê-Kô village, contaminating them for the Indians, employees of the Special Secretariat for Indigenous Health and family from employee of the Kakarekré Association. The water from these semi-artesian wells turned intensely yellow.

The daily headaches and headaches of Xikrin women, the widespread stomach pains among the Xikrin requesting endoscopies, suggest heavy metal contamination.

I observed an employee of the Special Health Department bringing a bottle of mineral water for her period of work among the Xikrin.

The tragedy announced by me years ago, runs its course into the Silent and

Chemical Ethnocide of the Xikrin with the large mining company seeking profits and offering cash to the Indians when pressured by pollution and refusing to stop their mistakes, with an index " ESG" compromising and shameful for us Brazilians.

May the Xikrin example serve as an openness to the Executive and Legislative Powers in favor of the intention of mining in indigenous areas or nearby.



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## DEAD IN THE COVID 19 PANDEMIC IN THE CATETÉ INDIGENOUS LAND IN 2020

The Xikrin population of the Cateté Indigenous Land with 1606 indigenous people died of COVID 19, with dedicated and quality assistance from the Special Secretariat for Indigenous Health and nursing of the Porekrô Association:

Bep-Karoti ☞ hypertensive in their early 50s; Tep-Tó ☞ hypertensive in the early 60s;

Bemok ☞ with heart failure and over 70 years of age; Ikrure ☞ with suspected skin lymphoma and older than 70 years; Ireabeti ☞ with rheumatoid arthritis in her early 20s.

Some Xikrin Indians refused to receive the COVID 19 vaccine, such as the leader

of the Oodjã village, his wife and father-in-law, due to programs by evangelical pastors of our civilization with videos posted on the internet, in which they urge the population not to be vaccinated in front of the open Bible. The leader of the Oodjã village does not favor the vaccination of his granddaughter's national calendar with interference from his mother and grandmother.

#### PERFORMANCE OF THE SPECIAL SECRETARY OF INDIGENOUS HEALTH (SESAI)

The performance of SESAI is commendable with the very good performance of the technician responsible for Polo Base Xikrin (Tiago), its doctor and higher-level nursing, nursing technicians and nursing technician from Associação Porekrô Raimunda, dentist, in all sectors of service of health services in the Cateté Indigenous Territory. They supply as a team everything this doctor tried to do with numerous difficulties in the past.

#### CORPORATE INDEX ESG – ENVIRONMENTAL, SOCIAL, GOVERNANCE (ENVIRONMENT, SOCIAL, GOVERNANCE) AND THE VALE COMPANY CONTAMINATING THE CATETÉ INDIGENOUS LAND AND THE XIKRIN INDIANS.

The ESG is an index that measures Environmental "E", Social "S" and "G" Governance practices. The "E" assesses the impact of a company on nature, the "S" if the company complies with human and workers' rights, the "G" if the company complies with good management such as consent to fight corruption and promotes innovations.

The ESG is a very current index that must be achieved with good evaluation by all the big companies that sell their products. The international public turns its attention to companies that take care of the "E" Environment, their populations and "S" employees, who comply with good Governance "G" or good management.

Companies that commit the Environment "E" and the populations within its scope "S", with a Governance "G" not committed to good management and to the 21st century and the future, will be judged by the public purchasing their products or its production. Your products will not be purchased or will be frowned upon by the buying public or countries.

Large investors have already realized that the current buying public is committed to Sustainability, values the Environment of production "E", is concerned with the surrounding populations and "S" workers, with the management of company "G". This perception of the ESG index focused on the Environment of production, the populations of the producing region and the Governance of companies is new and extends, having greater expression in

Europe and in sustainability-oriented democracies such as the United States. The ESG is a new index with a vision of production committed to the Environment, with Social commitment and with the Governance of companies selling their production. The VALE Company must not ignore the ESG and must comply with or achieve it.

The ESG is an index used to measure Environmental, Social and Governance practices, which large investors and company managers are noticing in the new generations, who do not only value economic-financial returns, but the Environmental and Social ones (Maurício Antonio Lopes , President of EMBRAPA from 2012 to 2018).

The ESG assesses the impact of a Company on nature "E", whether the company's Social Rights disrespect human and workers' rights "S", whether the company adopts good management practices such as fighting corruption and whether it has good Corporate Governance "G" (Marcelo Oliveira).

ESG will assess, in the present and in the future, the impact of Companhia VALE with its Onça-Puma Mill on the production of Nickel, with its Iron Mining complex at the 11 D Eliezer Batista mine, in the Amazonian Environment of the rivers Cateté, Itacaiúnas, Salobo and other streams of the Cateté Indigenous Land belonging to the Xikrin Indians, intensely polluted by heavy metals from mining waste, compromising the health and lives of the indigenous people. The water in the rivers became unfit for consumption, fish disappeared, compromising the Xikrin's diet, animals consumed contaminated by heavy metals, cassava - cassava - sweet potatoes contaminated by heavy metals, compromised vegetation, indices "E", "S", "G" negative regarding the sustainability of the VALE Company.

The VALE Company will have to adapt to the new concepts of the ESG index, not throwing mineral tailings from its mines into rivers and streams through clandestine conduits, and do away with any tailings ponds like the current ones upstream of the Djudjê-Kô, Cateté and Pokrô villages as a major aggravating factor, returning the recovered rivers to the Xikrin, eliminating mining with water, adopting sustainable, more modern and expensive practices, aiming at the sale of their production of Iron, Nickel and other metals to governments responsible for our Planet.

In the Cateté Indigenous Land in the southeast of the Amazon, the VALE Company is quite uncommitted to the ESG index and must adapt to the new practices required by the global buying public, such as the defense of the Environment, the Social of neighboring populations and other riverside communities and cities crossed by the river Itacaiúnas, of its employees, must

seek a Corporate Governance committed to Sustainability, so as not to have obstacles in the sale of its minerals abroad.

The VALE Company is committed to the devastating environmental disasters of Mariana and Brumadinho in the State of Minas Gerais. In the Mariana disaster with the collapse of the dam, the Doce River was contaminated by mineral tailings, extending to the Atlantic Ocean, contaminating the water and soil with heavy metals. In the Brumadinho disaster, 270 people disappeared in the mud from the tailings of the collapsed dam, of which 200 or so worked for VALE. These disasters show negative "E", "S" and "G" indices, indicating that VALE must adapt to ESG, prevention of life and health, and Sustainability. It should have the index "G" Governance, avoiding propaganda in the media, showing that it takes care of forests and watercourses such as the Linhares National Forest in the State of Espírito Santo, while ignoring the death of the Cateté and Itacaiúnas rivers in the Xikrin villages, Djudjê-Kô, Cateté, Pokrô and Oodjã, polluted by heavy metals from their mines.

The VALE Company must follow the ESG index (Environment, Social, Corporate Governance) of the new reality of buyers of its minerals without impediments "G", taking care of the Environment "E", aiming at the end of mining with water, avoiding deposition from the mineral tailings in lakes that could rupture, I finish the discharge of heavy metals in the rivers Cateté, Itacaiúnas, Salobo and other streams. These heavy metals compromise the health of the Xikrin Indians. The VALE Company shall provide for the cleaning of these rivers to return the animal life "E" necessary for the Xikrin's food and Food Safety, adjusting to the "E", "S" and "G" indices in order to sell its ores to the buyer countries and receive investments from large corporations.

Recently, the Finnish steelmaker Outokumpu, which purchased nickel from the VALE Company, began to investigate whether there was a failure of environmental responsibility for the contamination of the Cateté River, whether there was damage to the environment and damage to the Xikrin indigenous population due to the mining of the Onça-Puma mill.

VALE was sued by the Public Ministry and continues to deny the pollution of the Cateté and Itacaiúnas rivers. The mining company VALE shows a Governance committed only to production, exports and profits with a negative ESG index. A third of companies worldwide are already committed to the ESG index. Other companies will continue with these commitments to life, the Environment and Human Rights, in obtaining water and healthy food, innovations that favor Sustainability.

Large companies in Brazil such as Klabin, Marfrig, JBS Amazon Fund, brf, Ball

Corporation, Natura, Wickbold, Rede Globo, TV Cultura, Amazon and many others are already committed to Sustainability.

The VALE Company, which shows the Linhares National Forest as a commendable preservation, is missing, recognizing the Cateté, Itacaiúnas rivers, other streams such as the polluted and dead Bepkamreti near the Xikrin villages, in its mining in Carajás in the State of Pará. These rivers and forest vegetation are polluted by heavy mineral tailings Lead, Cadmium, Copper, Chromium, Manganese, Iron verified by Professor Reginaldo Sabóia de Paiva of the Federal University of Pará, at my request and by the Xikrin, Porekrô, Kakarekré and Baypran Associations, contradicting Law No. 6,938 and the Federal Constitution. The Human Rights of the Xikrin Indians are compromised by the water contaminated and polluted by heavy metals released by VALE into the rivers, streams of the Cateté Indigenous Land in the Eastern Amazon, unfit for use. The food is also contaminated.

The Human Rights of the Xikrin are also compromised by the numerous diseases, already described in my publications, which heavy metals at levels above those allowed by CONAMA (National Council for the Environment) can cause.

The DNA methylation (heredity) caused by heavy metals is transgenerational or that is transmitted to subsequent generations, causes cancers, it also affects the human rights of the Xikrin.

May the example of the mining of the VALE Company in Carajás, uncommitted to the Environment, Food Security of the Xikrin, health and survival, serve as a warning to the Judiciary, Legislative and Presidential Powers, above all, about the inconvenience of mining in the Amazon, on the Lands Indigenous, as it already happens intensely among the Yanomani and Munduruku, a path to ecocide and ethnocide.

Companhia VALE continues to interfere in the Social "S" of the "ESG" index with large amounts of money to the Indians, when pressured, seeking a postponement agreement with the Public Ministry. With the VALE and Indians agreement, the mining company continues to pollute rivers with heavy metals, continuing the Silent and Chemical Ethnocide of the Xikrin with its mineral waste harmful to the health of the Indians and compromising the Environment "E" and "G" Governance .

The amounts of money transferred to the Xikrin by VALE to continue polluting the rivers are significant. With these fabulous amounts from VALE to continue to pollute the rivers, the Xikrin buy new cars abandoned on the roads when they have mechanical problems, hold events for the possession of new heads of

camps created like the one at Pokrô with parties with tarpaulins assembled by show companies, coming from regional singers for an hour at dawn, charging a considerable amount in money, 500 guests from distant Kayapó villages and others, as I witnessed in the Oodjã village, paid for transportation and food by the Municipality of Parauapebas for an evangelical event. The Indians think that VALE's money is infinite and will increasingly charge more for their contaminated and dead rivers. The Indians will create new Associations for the new encampment villages, claiming more money from VALE, imagining that they will obtain for the 10 new accompaniments the construction of houses, schools, masonry health posts, new employees of SESAI.

VALE's money is not destined to differentiated education with appreciation of traditional culture, valuing the diet with healthy foods from its culture, valuing the exercise of walking, with educational messages in elementary school, with a message that money can end, and it is not infinite, that we should work and not hire workers from our civilization as employees. There is a lack of public policy, so young people play too much football with serious injuries to their knees and feet with air transfers at the cost of SESAI and Associação Porekrô. Young people

they only value Neymar with his hair dyed blond, blue, green, white.

Due to VALE's interference in the "Social" "S" index of the Xikrin, without anthropological and socio-environmental advice, transferring large sums of money to the Xikrin to continue polluting the rivers, the indigenous people purchase quantities of soft drinks, eat sweet stuffed cookies, get fat and stay diabetics in view of their genetic inheritance for obesity and type 2 diabetes mellitus, despite being warned by me.

In the midst of the COVID-19 pandemic, the shows banned in the country take place in the villages of Cateté and Oodjã with the presence of civilized Western guests from Parauapebas, who I witnessed asking for a cocktail of vitamins in the vein of medicines for Indians, at the Bep-Kanhoroti inauguration event in head of the Pokrô camp, with alcoholism among Indians and whites in which the young Bep-Noroti on renal dialysis had to be removed to Belém due to alcoholism and uremia, with expenses for SESAI and the Porekrô Association. The large amount of money and a lot of the Company VALE in the "S" Social part is interfering negatively in the Xikrin culture. Young "Merononure" teenagers no longer sleep in the "ATUBE" central house, previously isolated from their families to be considered adults in the Xikrin culture, not hunting and not working in the fields.

The diabetic and insulin-dependent diabetics who went to the camps are losing

weight like Kubut-Ká, due to the lack of insulin, appearing at night in the Djudjê-Kô village to apply insulin in the morning and with blood glucose levels greater than 500mg/dl.

My impression is that Brazil is not only the country of "Contrasts" as the writer Stephen White said, but also the country of "Absurds".

In the corporate "ESG" index of Companhia VALE, negative is evident in the Agreement of Justice, in which the mining company offered a significant amount to the Indians to stop the process of contamination of rivers in the Federal Supreme Court. With the one-year Agreement between the Xikrin Indians and VALE, the company continues to pollute the Cateté, Itacaiúnas and streams of the Cateté Indigenous Land, progressively and continuously contaminating the indigenous people with heavy metals, giving them money to spend on what they need. and what harms them.

The compensation money provided to the Indians provided by VALE is intended to stop the process at the Supreme Court for one year, and may be renewed.

VALE's negative interference in the "S" Social is accompanied by the Municipality of Parauebas, which finances parties and events. On July 18th and 19th, 2021 I witnessed the Xikrin leadership's inauguration party of the new Pokrô camp with tents set up for a singer's show who with his team was present for an hour at dawn, with forró. At the height of the COVID 19 pandemic, when parties are prohibited in cities and surroundings, several school buses and a tourist bus came from S. Félix do Xingu. Western civilized people were present, who before the party went to ask the health team for a vitamin cocktail in their veins, without any medical advice, possibly to have lesser effects of drunkenness, which we refused. They came in the Indian buses Kayapó, Gaviões de Marabá and Canelas from Barra do Corda do Maranhão.

On the night of July 18, 2021, indigenous and civilized men were drunk. The health team from the Indigenous Health Department and the Porekrô Association had to attend to Indians and drunken civilized people at night and at dawn. Bep-Noroti Xikrin with nephropathy and on renal dialysis, drunk, had to be removed to Belém in an alcoholic and uremic coma, unconscious. A diabetic mother was attended to by us in the early hours of the 19th, with a psychic condition of despair when witnessing her drunken son Xikrin. Parties financed by the Municipality of Parauebas.

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DNA METHYLATION (GENETIC CODE) INHERITANCE MAY PROMOTE CHRONIC DISEASES – DEGENERATIVE FOR CURRENT AND FUTURE XIKRIN INDIANS GENERATIONS,

WHICH MAY BE CAUSED BY HEAVY METALS OR CHEMICAL ELEMENTS RELEASED INTO THE CATETÉ RIVER BY THE ONÇA-PUMA DE NÍQUEL PLANT AND THE ITACAIÚNAS RIVER

FOR THE S11D IRON MINE OF THE VALE COMPANY

In this report, I follow the scientific references that I cite in the bibliography of publications in Epigenia, DNA Methylation (Genetic Code) Heredity promoted by Heavy Metals or Chemical Elements, exciting works that alert us to phenotypic and life changes (1 to 52). I rely on all these publications so that my description can be forwarded to the Public Prosecutor's Office, the Attorney General's Office, the Federal Supreme Court, the Legislature, the Xikrin Indigenous Associations and their lawyer, the Indigenous Missionary Council, the UN Human Rights and others in defense of the health, survival and heredity of the Xikrin Indians to be preserved.

The report is preventive exposing the changes that can occur in DNA Methylation or in Heredity by Heavy Metals or Chemical Elements, cited in the scientific references, Copper (4,8,12,27,35), Chromium (18,24,35,51), Nickel (4,5,52), Zinc (4,33,35,52), Manganese (16,21,27,37,51,52), Cadmium (3,4,5,8,11,15,24,25,26,30,31,39,43,45,47,48,49,51,52) and Lead (3, 4,6,10, 13,23,24,34,35,38, 41,44,46).

These Heavy Metals or Chemical Elements are at levels above those allowed by the National Environmental Council (CONAMA) in the Cateté and Itacaiúnas rivers, some at alarming and extremely toxic levels such as Lead and Cadmium (28, 29,42) with a higher number of publications.

Women are vulnerable to Cadmium due to its greater absorption than men (11),

and as a consequence to embryonic and fetal methylation with chronic degenerative diseases in later decades (2, 20, 32, 44). They also remain in river water longer than men with their daily activities with greater exposure to Heavy Metals.

DNA methylation is transgenerational or is transmitted to future generations (7,19,20).

Note – DNA methylation causes a change in gene expression. Epigenetic modification is described as an inherited change of Gene function without a change in nucleotide sequence (1).

The DOH to D (Origins of Health and Disease) drew attention to the fact that the programming of the embryo can be changed, that exposures in early life can influence postnatal life in terms of health (2, 20, 31, 44).

Heavy Metals or Chemical Elements that contaminate the environment promote DNA Methylation (Genetic Code) Heredity, changing the expression of genes, causing different phenotypes or forms observed in living beings (2,36). As an example, we have fish from water contaminated by Cadmium and Copper in which these Metals cause an embryotoxic effect (5,12,31).

Methylation of deoxyribonucleic acid (DNA) with histone modifications, reprogrammed epigenome, results in changes maintained during the postnatal life, which may impact health in later decades (1,20,22,32,44). Epigenome including DNA Methylation results in stable epigenetic changes maintained throughout life (22,32).

The Metals Copper, Chromium, Nickel, Manganese, Cadmium and Lead with greater severity in scientific publications, may compromise by the Methylation of the DNA the current and future generations, regarding low birth weight (2,3,4,6,49), the obesity (2.46) or overweight, type 2 diabetes mellitus (1.2.46) hypertension arterial (36.46), cardiovascular diseases (2,15,36,46), neurological disorders, (3,6,13,17,34,36,37,38,40,46,50) tumors (2, 4,18,20,23,30,47), renal (36), of the hearing aid with hearing loss (31.48), inflammatory (21.41). Obesity, high blood pressure, type 2 diabetes mellitus are increasing in incidence and prevalence, with deaths of diabetics among the Xikrin.

In type 2 diabetes mellitus, dietary changes are also present (Youtube João Paulo Botelho Vieira Filho and Bepkamrek, reports 2017, 2018, 2019) (42).

There are numerous scientific publications on DNA methylation in humans (3,4,6,9,10,11,17,18, 21,23,24,25,30,33,37,40,41,45,46,47 ,48,50,51), from rats (37),

mice

(13,30,32,34,38), birds (27), fish (5,12,31), Armenian rock lizards (35), invertebrates (19,39), insects (19), crustaceans (8), molluscs (26) and gastropods (26), earthworms (39), rice and plants (7,15,16,45), by Heavy Metals or Chemical Elements with modifications and elimination of life or compromised survival. The evidence is in the lifeless waters of the Cateté and Itacaiúnas rivers, essential for the survival of the Xikrin, without fish and tadpoles, which were abundant before the mining of the VALE Company.

Scientific publication of samples of pancreatic islets responsible for insulin production, from diabetics submitted to necropsy showed changes in the Genome, Methylation, Epigeny of the cells' DNA (2).

In my previous reports (42 and Youtube 2019) sent to the Public Prosecutor's Office, the Attorney General's Office, the Federal Supreme Court, the Porekrô, Kakarekré and Baypran Indigenous Associations, I exposed the pathologies that Iron, Copper, Chromium, Nickel, Zinc, Manganese, Cadmium and Lead, present in the water and sludge of the Cateté and Itacaiúnas rivers, verified by professor Reginaldo Sabóia de Paiva of the Federal University of Pará (28, 29), may cause above the limits allowed by Conama legislation (Youtube João Paulo Botelho Vieira Son), Congress of Pathology and Disasters, other videos 2019), ABRAN – Brazilian Association of Nutrology.

These pathologies caused by these Metals are cancers in which DNA Methylation may be present(1,2,4,15,20,23,30,45,47), malformations or teratogenesis already present among the Xikrin as the cancers also in which Methylation may be acting(30,42), immunity alterations already present with cases of diffuse lupus erythematosus and rheumatoid arthritis among young people(42), obesity very present in which Methylation may be acting (42, 46), type 2 diabetes mellitus very present in which Methylation may be acting(42), neurological alterations present in which Lead and Heavy Metals cause DNA Methylation (3,6,13,34,37,38, 42,50,51), arterial hypertension present in which Methylation may be acting(42), cardiovascular disease already present in which Methylation may be acting (42), oculars with conjunctivitis to Nickel very frequent daily, those of very present skin and mucous membranes(9,42,46), bone, due to hormonal disruptors(9,42,44,46), gifts(42). Some of these pathologies are occurring with increasing incidence and prevalence among the Xikrin.

The nursing technicians from the Special Secretariat for Indigenous Health (SESAI) ask me: "Why do the Xikrin of the Cateté Indigenous Land have so many diseases?" Unlike the Suruí and Parakanã! Currently, I suppose that Heavy

Metals may be the cause of thrombocytopenic purpura and other rare diseases such as meningocele deforming the midline of the face, adrenogenital syndrome, congenital hypothyroidism due to lack of thyroid, malformation of the digestive tract. Headaches or headaches are of high incidence and worrisome among the Xikrin who are drinking water with Lead and Cadmium at high levels, feeding on cassava-potato-fish with these Heavy Metals at highly toxic levels.

Our current executive government wants and the previous one wanted to open the Indigenous Lands to mining and mining, especially in the Amazon, without any knowledge and scientific advice, without any notion of health protection for our Brazilian populations.

The mining of Nickel with water from VALE's Onça-Puma Plant with the dumping of Heavy Metals or Chemical Elements into the Cateté River through ducts and pipes

clandestine, should be closed for the benefit of current and future populations affected in their health and survival. (Youtube João Paulo Botelho Vieira Filho). The Onça-Puma mining dams that drain Heavy Metals or Chemical elements for the river Cateté, can break with torrential rains of the Amazon and global warming, must be ended. The Xikrin Villages Djudjê-Kô and Cateté are located on the left bank of the Cateté river and can be affected by the collapse of dams (Youtube – João Paulo Botelho Vieira Filho, Aurelién

Fontanet, Kaituk Xikrin and Bep-Tokran Xikrin 2019).

The Cateté and Itacaiúnas rivers must be cleaned of VALE's Heavy Metals or Chemical Elements and revitalized by the Mining Company.

The socio-economic development of the Amazon must preserve the health of its indigenous populations, riverside dwellers and cities, investing in the environment, forests, sustainability of rivers and groundwater, taking care of water that is a common good and not polluted or poisoned by Heavy Metals.

Methylation of the Genetic Code DNA of humans should be avoided (3,4,6,9,10,11,17,18,21,24,25,27,30,33,37,40,41,43,45, 47,48,51), animals (5,7,8,12,13,19,23,26,27,30,31,32,34,35,37,38, 39,45) and vegetables(7,15,16,52).

The demagoguery of scientific ignorance in the promotion of mining and garimpos (more than fifteen hundred dredges in the rivers of the Amazon), extracting gold from river courses and ravines, is harmful to current and future populations. It is against socio-economic development as it can cause chronic-degenerative diseases by modifying the Genetic Code and Heredity of future and current populations (14).

Mercury used in gold mining is cumulative in the body like other Heavy Metals and promotes DNA Methylation (4,24).

The Heavy Metal Mercury present in the rivers of the Amazon is used in gold mines, compromising huge areas in which the biggest indigenous victims are the Yanomami and Munduruku. He is possibly programming the genetic damage of generations of Indians, riverside dwellers and fish consumers, through the DNA Methylation Epigeny, causing changes in the performance of genes that will be transgenerational (7,19).

The Xikrin are eating cassava, cassava, sweet potatoes, in softening process of these roots in the Cateté and Itacaiúnas rivers (29.42, Youtube João Paulo Botelho Vieira Filho 2019), with high levels of Lead and Cadmium(28,29), Metals

terrible for the consequences on the brain, kidneys, bones and other vital organs (42). These Heavy Metals that accumulate in the body have evidence in scientific publications of DNA Methylation, gene alteration regarding its

expression with transgenerational transmissions(7,19) or for future generations for those who do not die.

The Ecocide of the Cateté and Itacaiúnas rivers has already occurred with their waters poisoned or polluted by Heavy Metals or Chemical Elements of the VALE Company. The Doce rivers in all their extension reaching the Atlantic Ocean, the Paraopeba of the State of Minas Gerais, also suffered Ecocide due to the disastrous mining of the VALE Company.

The Ethnocide of future and current Xikrin populations in the Cateté Indigenous Land, southeast of the State of Pará, is underway if there are no preventive measures in defense of health, preventing the release of Heavy Metals or Chemical Elements into the Cateté, Itacaiúnas rivers and tributaries such as Salobo, Bepkamrecti and others by Companhia VALE.

Warirá, belonging to the leadership of the Eastern Parakanã, who suffered so much in health during the construction of the Transamazônica highway during the military governments (Youtube 2019 João Paulo Botelho Vieira Filho and Tié Parakanã), asked me: "Why do we Indians treat Western civilized people better than we do? do they treat so badly?"

I replied that among us civilized Westerners others were lacking, like Marshal Rondon, who was very kind to the Indians on a national level.

Preventive strategies against transgenerational chronic-degenerative diseases, which will be repeated in future generations by DNA Methylation (Genetic Code) by Heavy Metals or Chemical Elements that should not be ignored(1,2,44).

Let us celebrate Life in the Cateté Indigenous Land of our dearest Xikrin, in Brazil against Ecocide and Ethnocide that represent death.

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