INA Newsletter

International Neurotoxicology Association

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President's Message:

Dear INA-members:

When writing this message the year 1996 is only about one week old. I, therefore, take the opportunity to wish all members of INA a happy and healthy New Year. May both your personal and professional goals be fulfilled, and may your scientific endeavours be characterised by innovative questions and equally novel answers. As for INA: I wish our society further growth and increasing recognition within the scientific community.

The past year witnessed our fifth biannual meeting in the spectacular surroundings of Port Ludlow near Seattle, and it is with great respect that I again acknowledge the hard and successful work of the local organisers and the program committee in putting up this memorable event. Thanks to the speedy work of Joan Cranmer, Lucio Costa and Steven Gilbert we have already seen the printed abstracts in NeuroToxicology, and all of us look forward to seeing the full proceedings in print later this year.

The year 1996 will be a year of planning ahead for INA 6 in Szeged (Hungary) in 1997. Although the main burden of preparatory work is upon Illes Desi and his team in Hungary, the Executive Committee nevertheless feels an obligation to help in every possible respect, both by support in setting up a high quality scientific program by means of a program committee covering the broad field of neurotoxicology, as well as by helping in the fund-raising process. Since money has become so rare these days, INA-members having ideas as to potential sponsoring bodies are strongly requested to provide names and addresses so that these can be officially approached by the EC. Participation of young promising researchers and students in Szeged is badly needed.

As for the scientific program both Illes Desi and myself have already received some interesting proposals including in vitro neurotoxicology, genetic polymorphism and susceptibility to neurotoxicants, neuroimmunology and neurotoxic /neuroprotective features of metallothionines. Those who have submitted proposals will soon be approached for additional details and names, such that the future program committee can be given the embarrassment of riches; additional proposals are badly needed, however, also for candidates for the 2nd Jacob-Hooisma Memorial Lecture. I have proposed a first planning meeting in Szeged by April/May 1996, and a first program framework should be discussed with the local organising committee by then.

Having said this I am looking forward to a vivid

before the sun rises too high and the heat became overwhelming. Brasilia Legal has electricity for 3 hours a day, from 6 pm to 9 pm - when there is enough fuel to run the generators. During the day, the villagers live a primitive lifestyle, carrying out tasks that don't require external energy; at 6:00, in almost every house, the television lights up and the village is in contact with the outside world until 9 pm when everything becomes intensely dark.

The Fitzcarraldo-esque nature of our adventure is striking - sitting in our hammocks with our portable computers, we decide to name our project CARUSO. It is hard to imagine that in this enchanting setting, we are going to conduct a study on the biogeochemistry of mercury in the Amazon and the neurotoxic and cytogenetic effects of methylmercury poisoning from the consumption of contaminated fish.

Mercury contamination in the Amazon is linked to gold extraction in the gold mining areas called garimpos. Gold is extracted from the soil or river sediment through amalgamation with mercury and the amalgamate is then heated, giving off mercury vapours while leaving the precious ore. There are an estimated 1 million gold-miners (garimpieros) in the Brazilian Amazon, generating the release of over 130 tons/year of mercury into the environment The metallic mercury in the environment is transformed into methylmercury by the activity of bacteria present in soil, sediment and suspended particulates in water Organic mercury is highly assimilatable into the trophic chains where it can be biomagnified a million-fold between initial transformation and the ultimate predatory species.

During this first visit we carry out a preliminary study in two villages, Brasilia Legal and Ponta das Pedras, 250 and 350 km downstream from the garimpos. Our Brazilian colleagues had previously visited these villages and had initiated a cytogenetic study of methylmercury contamination. On arriving in the villages, we meet with the village leaders and the community health agents, who organise a meeting in the village school. We explain the objectives of our study to the villagers and tell them that during this visit we will just select a limited number of people.

Their questions are similar to those that we have encountered with other groups of potentially exposed persons: "Will you inform us of the results?" "What are the solutions?" We promise that we will return with the results and discuss the solutions with them. Of the 40 persons who are asked to participate, 39 respond positively. While we carry out the health aspect of the study, our colleagues are taking samples of the soil, sediment, water, foliage and fish. The results of the neurotoxic aspects of the study, published in Neurotoxicology (vol 16), suggest that manual dexterity and certain visual functions diminish with increasing hair mercury levels, at concentrations considerably below 50µg/g considered to be the limit above which clinical signs and symptoms begin to appear.

March 1995. Given the positive results of the preliminary study we are returning to Brasilia Legal to pursue a full-scale study of a larger cohort. Dr, Fernando Branches, a Brazilian physician who alerted the scientific community to the potential problems of mercury contamination in this region, accompanies us. When we arrive, we again speak with the village leaders, discuss the results of the study and our intention to continue. We learn that in the intervening year other researchers from Japan, the United States and Europe have been there and have taken hair samples, blood samples and performed neuro-behavioural testing on the children. "Why should we participate in yet another study?" What will we gain from it?" "Foreign scientists come, take bits and pieces of us and never return!" We explain that it is probably a good thing that several studies are being done in this area since if many studies show that there is a problem then actions can be initiated more rapidly. We inform them that all the studies of our research group are carried out in close collaboration with the exposed populations and that this one will not be different. Although they remain sceptical, 40% (98 persons) of all of the adults in the village participate. The results from neurobehavioural and clinical exams confirm the previous findings, particularly for motor performance which diminishes with hair increasing hair mercury levels. The cytogenetic study reveals increasing impairment with increasing hair mercury levels. Our colleagues continue to take samples of soil, sediment, foliage and fish and can now perform analyses on the boat and in a laboratory that they helped set up on the Santarem Campus of UFPa. They are considering the possibility that deforestation may contribute to the high mercury levels observed in this environment.

November, 1995. It is low-water period and we are again in a boat heading upriver. In the Amazon Basin, there is a period of high water, when the riverbanks are flooded and the treetops peek above the water, and a low water period, when the river recedes making travel much more difficult. Moreover, this is the time of the year when the forest is burned. We count 30 different fires between Santarem and Brasilia Legal. At times our eyes sting and the sun does not quite penetrate the layer of smoke. A Brazilian colleague tells us that there are times when the smoke is so thick that the planes cannot land. It is like watching the destruction of the planet. Skirting (and sometimes hitting) sand banks, we finally arrive in Brasilia Legal, where we dock for 4 days.

The objective of this trip is to present the study results, while our colleagues, who have been here for 5 weeks, take environmental samples during the low-water period. A meeting is organised at the school and the

villagers express their surprise and pleasure that we did indeed return with the results. We discuss the results, the potential health implications, as well as short term and long term solutions. For the moment, the way to reduce mercury levels is to reduce the consumption of piscivorous fish. We visit the homes of the 98 participants and give them the results of their hair mercury levels, answering questions and discussing solutions. The last morning the teachers invite us to address the students to stimulate them to stay in school and to explain the study. "Where is the mercury?" we ask. "In the fish!" they answer.

"And what can we do?" "Eat fish that don't eat other fish" they chant.

With Brazilian students presently training in our laboratories, we will return to Brasilia Legal and other villages along the Tapajos this summer....

Donna Mergler,
Montreal, January, 1996.

INA-6 date

The date of the next INA meeting (INA-6) in Szeged, Hungary has now been fixed as **July 1 to 5 1997**. Please make a note in your diaries.

First INA soccer game

INA-5 at Port Ludlow provided the setting for the first official INA soccer (football for the non-americans) game. The two battling teams were Italy (shirts) and the Rest of the World (skins), and the presence of INA's President, Vice-President and President-Elect guaranteed the official nature of the event.

Robert Rist (in the centre of our picture between Lucio Costa and Marcello Lotti) was named Most Valuable Player, while honourable mentions were awarded to Yorham Finkelstein (with the ball) for his outstanding - and unexpected - performance as goalkeeper, and to Antonio Mutti (on the right, seated) who scored two powerful goals despite his limited mobility. The final score: Italy **5** Rest of the World **3**. The secret to Italy's success: a pre programme retreat with the British coach, David Ray, where each player was "forced" to drink at least two beers. Illes Desi has promised to schedule another game in the official programme of INA-6. Miki Aschner was hurt by a high ball that smashed on his glasses, but has since recovered nicely.

Lucio G. Costa.

Official Team Photograph:

Copy for newsletter by **May** please for June issue to David Ray, MRC Toxicology Unit, Lancaster Road, Leicester LE1 9HN, UK; fax: +116 252 5616; email: der2@le.ac.uk.
You are invited to send personal news, events, details of meetings, titles of new theses, reviews, comments, jokes, abuse or anything else of interest to INA members.