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**THEME**

***TOGETHER FOR HUMAN AND ENVIRONMENTAL WELFARE***

*Under the Auspices of*

**His Excellency President**

**MOHAMED HOSNY MUBARAK**

**VENUE**

**Opening Ceremony: Cairo International Conference Center ( CICC )**

**Scientific Programme : Egyptian Petroleum Research Institute ( EPRI )**

**ABSTRACT**

**DIGEST**

**OS 5.7**

**MONITORING OF PESTICIDE RESIDUES IN DRINKING WATER**

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Twenty tap water samples were collected from 2 Governorates in Egypt and were analyzed for pesticide residues. The samples were selected to cover a range of exposure to pesticide usage and a variety of water sources (Nile and underground water). Results indicated that 18 samples contained DDT and its metabolites in levels varied between 0.021 and 0.054 ppm. Fourteen samples contained dieldrin in levels varied between traces and 0.004 ppm, while 13 samples contained lindane in levels varied between 0.001 and 0.006 ppm. Endrin was detected in only 12 samples at level varied between 0.001 and 0.015 ppm. Results also indicated that more than 13 unknown compounds were detected. Data show that most of the tested samples from rural areas contained levels of pesticides higher than the samples from urban areas. The level of pesticide residues depends on the source of water. Underground water from depth more than 30m contained traces of pesticides. The highest levels of pesticides were detected in underground water of depth less than 14m. Water samples from Nile water sources contained from traces to 0.001 ppm of pesticide residues.

**OS 11.8**

**CHEMICAL CONSTITUENTS AND PESTICIDE RESIDUE LEVELS IN HUMAN, COWS AND BUFFALOES MILK**

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Milk and its products are a main constituent of the daily diet especially for vulnerable groups such as infants, school- age children, pregnant lactating women and old age. A total of 128 samples were collected at random from different sources and sites in Egypt. Seven samples were human milk, 67 were cows milk and the rest were buffaloes milk. All the tested samples were analysed for the detection of fat, sugar protein and ash. Data indicate that there was a great difference in their constituents. The percentage of fat in human milk varied between 3.67- 3.79% while it was 3.89- 4.12 and 7.58- 7.98 for cows and buffaloes samples, respectively. Buffaloes milk headed all the tested milk in its content of protein (3.98- 4.01 %) , followed by cow milk (3.27- 3.31) and by human milk (1.89- 2.03 %). Human milk headed all the other tested milk in its sugar content (6.19-6.21 %) followed by buffaloes milk (5.01- 5.19 %) ,and by cow milk (4.99- 5.09 %). The total content of ash was 0.68, 0.31, 0.78 % for cow, human and buffaloes milk, respectively. All the tested samples of buffaloes and cow milk contained DDT and its metabolites, lindane, endrin, dieldrin, while only 85% of the tested human milk samples contained lindane, DDT and its metabolites, dieldrin, and endrin. The presence of these residues varied between traces to 11.9 ppm, in buffaloes and cow milk, while the maximum residue level was 1.26 ppm in the case of human milk. The level of pesticide residues was related to the fat content of the tested milk. Buffaloes milk headed all the other tested milk in its content of pesticide residues followed by cow and finally by human milk .

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## TRANSFORMATION OF ATMOSPHERE AND BIOSPHERE BY AGROCHEMICALS.

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Extensive work was directed in the last thirty years to study the transformation of atmosphere and biosphere as a result of extensive use of agrochemicals in Egypt. Egypt as an example for a country in third world, injected in the environment in the last 40 years 690450 metric tons of pesticides (182 different compounds) and 250000 metric tons of chemical fertilizers, while the whole world injected in the global environment 210.4 million metric tons of pesticides and 3024 million metric tons of nitrogen and 1503 million metric tons of phosphorous fertilizers. This work was directed to find answers for the following questions:- 1) Is the problem of environment pollution by agrochemicals in Egypt a local or international problem? ,2) What is the ancient Egyptian concept in soil and plant protections and why this concept is changed in the last 9000 years?, 3) How agrochemicals can be transported from local to global atmosphere?, 4) Can these agrochemicals and their breakdown products be transformed in the local and global atmosphere?, 5) What is the relation between these chemicals and their breakdown products and the upersphere ? Can these metabolites and final products i.e. NO<sub>2</sub>, SO<sub>2</sub>, CO<sub>2</sub>, P<sub>2</sub>O<sub>2</sub>, Cl, Fl ...etc play the same role of the chlorofluorocarbons? , 6) Can these agrochemicals be transported from Egypt to other parts of the world through atmosphere and rain water?, 7) Can these chemicals pollute the local and global hydrosphere? and how these chemicals find their way to the Mediterranean and red see?, 9) What are the levels of these pollutants in Nile River, lakes, underground water, canals ....etc? and what is their side effect on aquatic fauna?, 10) How these chemicals and their breakdown products find their way to the biomass ? ,11) How these chemicals concentrate in the living organisms?, 12) What are the side effects of the accumulation of these residues on plant cell, plant physiology, plant production?, 13 ) What are the side effects of these residues on soil microoraganisms, macroorganisms, soil fauna and their activities (ammonia, nitrite and nitrogen fixation), and soil fertility?, 14) What are the side effects of these chemicals which were used extensively on the useful animals i.e., pollinators, honey bees, parasites and predasious insects ...etc?, 15) Can these pollutants accumulate in the trophic chains?, 16) What are the side effects of these pollutnats on the Egyptian peoples in Rural and Urban areas?, 17) What is the relationship between the quantity of these chemicals used and the increased number of death cases by cancer, kidney and liver failure?, 18) Measurable amounts of agrochemcial residues in our food and water present a variety of problems to the Egyptian people, what are the levels of these residues in our food stuffs and drinking water?.What is the total quantity of residues in the total diet samples?. What is the daily intake of these residues / person in Egypt? The lecture includes also answers to other important questions.

*Monitoring Environmental Pollutants*

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**HAIR AS A BIOINDICATOR FOR THE DAILY INTAKE OF LEAD BY EGYPTIAN PEOPLE.**

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Two hundred and thirty four samples of Egyptian hair from both adult and children (less than 15 years old) were analyzed for lead. Samples were collected from four locations (Moshtohor village, High polluted area in Cairo (Ramsis and Tahrir Squares).semi polluted area ( El- Maadi) and an area nearly free from pollution (El-Salhia). The daily intake of the Egyptian people of lead through respiration is varied greatly according to rural or urban areas and according to the density of traffics and the numbers of factors. While the daily intake of each person in the highly polluted area in Cairo through respiration is 0.034 mg/person, it is 0.007, 0,003 and 0.0001 in El-Maadi and El- Salhia. The daily intake of the Egyptian person from water is 1.316 mg/person where the Egyptian person drink 2.810 litre/day. The daily intake of lead through meal diet was estimated to be 0.592 mg/person. That means that the daily intake of Egyptian person from lead varied between 2.891 and 2.246 mg/ person. Results indicated a marked variation of the hair- Pb concentrations which were detected in the different samples from the four localities. The mean level of lead which was detected in adult hair was 95.3 ppm. at highly polluted area, while it was . 59.3 , 35.7 and 23.7 ppm in El- Maadi, Moshtohor, Salhia respectively. While the levels were 83.3, 52.0, 31.0 and 11.4 for children in the same tested areas respectively. Results indicated that there is a correlation between the daily intake and the level of lead in Egyptian hair. While the correlation between air pollution and the level of lead in hair was very clear.

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**THE RELATION BETWEEN THE DAILY INTAKE OF HEAVY METALS AND THEIR LEVELS IN THE EGYPTIANS TEETH.**

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it is well known that 94 - 95 % of the total body lead (body burden) is accumulated in bones. Teeth have been used in this study as indicator of integrated long - term exposure and have the advantage that samples are easy to procure. One hundred and thirty five samples of teeth were collected from rural (Moshtohor village) and urban (Shobra El- Khema) areas. The daily intake of the Egyptian people lead through respiration, drinking water and through meal diet was estimated for the people in both areas. Data indicate that the daily intake of lead through respiration for the adult was 0.003 and 0.02 mg/person in both Moshtohor and Shobra El- Khema respectively. While the daily intake of lead through drinking water for both was 1.316 mg/person. The daily intake of lead through meal diet was estimated to be 0.592 mg/person. Results indicate that the mean daily intake of the Egyptian person from lead varied between 1.928 mg/ person in Shobra El- Khema and 1.911 ppm/ person in Moshtohor village. The level of lead. varied greatly in the teeth of persons in both tested areas. While the mean level of lead in adult persons was 55.52 ppm in Shobra El- Khema, it was 28.72 ppm in Moshtohor. For that the level of lead in human teeth can be considered as bioindicator for their daily intake.