Acta Ciencia Indica, Vol. XLIV C, No. 1, 05 (2018)

INNOVATION OF COMMERCIAL POTENTIAL OF INDUSTRIAL DRAIN WATER IN SATAHARIA INDUSTRIAL SITE IN JAUNPUR (U.P.) INDIA

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RECEIVED : 21 August, 2017

The industrial effluents through drains damage the health of human, plants, soil and even the buildings and monuments. Not only this, these pollutants are very valuable if analysed and recovered by proper treatment of effluents. These, in general, contain adequate amount of nitrogen, phosphorous and zinc which lack in soils of north India leading to a sharp decline of crop production in quantity and quality.

In the present dissertation an analysis of drain effluents of some industries in SIDA, Jaunpur (U.P.) India has been done. The cost of the effluents has been calculated which is quite appreciable and may help in raising up the G.D.P. of the nation.

INTRODUCTION

Zinc deficiency affects about 2.2 billion people around the world. Zinc deficiency may manifest as Acne, Eczema, Xerosis (Dry scaling skin) seborrheic dermatitis or alopecia (thin and sparse hair). There may also be impaired wound healing. Zinc deficiency can manifest as non-specific oral ulceration, stomatitis, or white tongue coating. Rarely it can cause angular cheilitis (sores at the corners of the mouth) and burning mouth syndrome. Severe zinc deficiency may disturb the sense of smell and taste [1]. Night blindness may be a feature of severe zinc deficiency. Impaired immune function in people with zinc deficiency can lead to the development of respiratory, gastrointestinal, or other infections, *e.g.*, pneumonia. Zinc deficiency contributes to an increased incidence and severity of diarrhoea. Zinc deficiency may lead to anorexia and anorexia nervosa. Wilson's disease, sickle cell disease, chronic kidney disease, chronic liver disease have all been associated with zinc deficiency. Although marginal zinc deficiency is often found in depression, low zinc levels could either be a cause or a consequence of mental disorders and their symptoms [1, 2]. Foods high in phosphate include dairy products, whole grain cereals, nuts, and certain meats. Cola drinks contain a lot of phosphate so much, in fact, that they can cause too much phosphate in the blood. People use phosphate salts for medicine. Phosphate salts are taken by mouth for treating blood phosphate levels that are too low and blood calcium levels that are too high, and for preventing kidney stones [3]. They are also taken for treating osteomalacia (often called "rickets" in children), a condition caused by a mineral imbalance in the body that leads to softening of the bones. Phosphate salts are also used for improving exercise performance, as an antacid for gastroesophageal reflux disease (GERD), and as a laxative for emptying the

bowels before surgery. Phosphate salts and calcium are applied to sensitive teeth to reduce pain. It is advised to avoid using phosphate that contain sodium if you have heart disease [4].

Nitrate salts are found naturally on earth as large deposits, particularly of nitratine, a major source of sodium nitrate. Nitrate salts are found in manmade fertilizers. As a by-product of lightning strikes in earth's nitrogen-oxygen rich atmosphere, nitric acid is produced when nitrogen dioxide reacts with water vapour. Humans are subject to nitrate toxicity, with infants being especially vulnerable to methemoglobinemia due to nitrate metabolizing triglycerides present at higher concentrations than at other stages of development. Methemoglobinemia in infants is known as blue baby syndrome. High levels of nitrate fertilization also contribute to elevated levels of nitrate in the harvested plant.

Zinc is an essential micronutrient which means it is essential for plant growth and development, but is required in very small quantities. Although zinc requirements vary among crops, zinc leaf concentrations (on a dry matter basis) in the range 20 to 100 mg/kg are adequate for most crops. All plants require sufficient supplies of macronutrients for healthy growth, and nitrogen (N) is a nutrient that is commonly in limited supply. Nitrogen deficiency in plants can occur when organic matter with high carbon content, such as sawdust, is added to soil. Soil organisms use any nitrogen to break down carbon sources, making N unavailable to plants [7]. This is known as "robbing" the soil of nitrogen. All vegetables apart from nitrogen fixing legumes are prone to this disorder. Some symptoms of nitrogen deficiency (in absence or low supply) are as like the chlorophyll content of the plant leaves is reduced which results in pale yellow color. Older leaves turn completely yellow. Flowering, frutings, protein and starch contents are reduced. Reduction in protein results stunted growth and dormant lateral buds. Plants look thin, pale and the condition is called general starvation [8].

Table 1. Econometric data of industries effluents at SIDA, Jaunpur (U.P.) during 2014

S. No.	I Industrial Units	II Effluents flow (KL/day)	III (II × 365) Effluents flow (KL/Year)	IV Nutrients concentration in effluents(g/KL)		V (IIIxIV) Total nutrients flow per year (Kg)	VI (Nutrients rate) Cost of nutrients discharged per year (in Rs)
1.	Board and Paper Mill	27,635	10086775	Zinc	2.72	27436.028	823080.00
2.	Balla ji Woolen Mill	11,215	4093475	Zinc	2.28	9333.123	279993.69
3.	Hawkins Cooker Limited	8,145	2972925	Zinc	4.02	11951.158	358534.74
				Phosphate	56.57	167999.991	49600.00
4.	Modern Foam Industries	21,525	7856625	Zinc	5.31	41718.678	1251560.34
5.	Pepsico India Holdings	9,057	3305805	Nitrate	778.73	2574329.528	408798.00
Total cost in Rs							31,71,565.00

Note: The price of treated drain water has not been estimated.

Phosphorus deficiency is a plant disorder associated with insufficient supply of phosphorus. Phosphorus deficiency is most common in areas of high rainfall, especially on acid, clay or poor chalk soils. Particularly susceptible are carrots, lettuce, spinach, apples, currants and gooseberries. Symptoms include poor growth, and leaves that turn blue/green but not yellow oldest leaves are affected first [4]. Fruits are small and acid tasting. Phosphorus deficiency may be confused with nitrogen deficiency. Undersides of tomato plant leaves, and the veins and stems, may turn purple, stiff, stunted plants with purplish tinge. Chlorosis yellowing of leaves, often interveinal in some species, young leaves are the most affected but

in others both old and new leaves are chlorotic. Necrotic spots death of leaf tissue on areas of chlorosis. Bronzing of leaves chlorotic areas may turn bronze coloured. Rosetting of leaves zinc-deficient dicotyledons often have shortened internodes, so leaves are clustered on the stem. Stunting of plants small plants may occur as a result of reduced growth or because of reduced internode elongation. Dwarf leaves ('little leaf') small leaves that often show chlorosis, necrotic spots or bronzing. Malformed leaves are often narrower or have wavy margins [4 & 8].

RESULT AND DISCUSSION

A critical scanning of data tabulated in the given chart reveals an amazing and interesting fact regarding the financial remediation of industrial campus .The cost of the wasted nutrients discharged per annum through drains carrying nitrogen, phosphorous and zinc tolls about Rs 31, 71,565.00 during 2014. In addition to this the treated water may return a good cost if employed for laundry, refrigeration and irrigation. It will be a bonus to the industrial units. The total financial achievements may be used for the environmental protection, beautification, greenery, cleanliness and other social works thus waste discharges from the industrial units if managed properly, may help in the improvement of environmental health, financial budget of the industrial units and the GDP of the nation solving food and fodder crisis of the country facing successful launching of "खाद्य सुरक्षा गारंटी अधिनियम". Thus the project if adopted and implemented successfully may lead to billing of two birds with one stone.

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