

IJARESM Menu

- Publication Ethics
- Peer Review & Publication Policy
- Call For Papers
- Why IJARESM
- Topics Covered
- Special Issue

Download

- Author Guidelines
- Copyrights Form
- Paper Template

Latest News

NO IMAGE **High Impact
Factor Journal in
India**

Posted Date : 30th Sep, 2020

High Impact Factor Journal in
India: <http://www.ijaresm.com/>

More...



Visitor Counter

2 5 5 8 6 0 9 8 3

IJARESM is Indexed in



THOMSON REUTERS EndNote

Welcome to IJARESM

International Journal of All Research Education and Scientific Methods (IJARESM), ISSN: 2455-6211, **IMPACT FACTOR: 7.429**, **SJR: 2.28** is a scholarly online, **UGC certified**, open access, **peer-reviewed**, multi-disciplinary, monthly, and fully refereed journal focusing on theories, researches, scientific methods and applications in all research areas. It is an international scientific journal that aims to promote research in all the research fields like Engineering, Science, Technology, Education, Management, Medical Sciences, Dental Sciences, Agricultural Sciences, Social sciences, Health Care, Arts & Humanities and many more. IJARESM Publication is **indexed in Google Scholar, SJR, Research Gate, Thomson Reuters Researcherid** and also indexed in **UGC Approved List of Journals**.

UGC Journal Details

| | |
|--------------------------|---|
| Name of the Journal : | International Journal of all research education & scientific methods |
| ISSN Number : | 24556211 |
| e-ISSN Number : | 24556211 |
| Source : | UNIV |
| Subject : | Engineering(all);Management of Technology and Innovation;Management Science and Operations Research |
| Publisher : | IJARESM Publication |
| Country of Publication : | India |
| Broad Subject Category : | Multidisciplinary |

Print

The journal covers all the **research journal** areas like engineering, education, science, technology, biometrics, management, Artificial Intelligence, Robotics, Medical Sciences, Agricultural Sciences, Dental Sciences, health care, law, Arts & humanities and many more. IJARESM publishes original research articles, review articles and technical notes, dissertation, thesis and conference proceedings. The journal reviews papers within 24 hours of submission and publishes accepted articles on the web immediately upon receiving the final versions and processing charges. IJARESM Publication in India is a **lowest cost publication** house which works on the principle of No profit No loss and **publish paper in ugc approved journal**. IJARESM International Editorial/Reviewer Board representing many well-known Colleges/Institutions, Universities and Organizations in **USA, UAE, UK, Canada, Australia, China, Algeria, India, Russia, Malaysia, Iraq, Iran, Saudi Arabia, Oman and many more**.

Our strength is:

- 24 x 7 online/telephonic Customer Support.



PAY NOW >

JOIN US >

SUBMIT YOUR PAPER NOW >



Like Page

Dissertation/Thesis





IJARESM Menu

- Publication Ethics
- Peer Review & Publication Policy
- Call For Papers
- Why IJARESM
- Topics Covered
- Special Issue

Download

- Author Guidelines
- Copyrights Form
- Paper Template

Latest News

NO IMAGE
Paper Publication in USD 50 only

Posted Date : 15th Sep, 2020

Paper Publication in USD 50 only in India

More...



Visitor Counter

2 5 5 8 6 0 9 8 3

Issue 8

You Are Here : [Home](#) > [Issues](#) > [Volume 6](#) > [Issue 8](#)

Papers are being invited from the authors/researchers for publication in the IJARESM, Vol. 6, Issue 8, August -2018. Manuscripts are being uploaded soon after the Reviewer's decision and submission of copyright form & Processing charges by the Author. Submit your paper for possible publication in IJARESM, Vol. 6 Issue 8, Impact Factor: 2.287.

Total Records : 18 Records

| | | | | | | | |
|--------------|--|---------------|------------------------|----------------|-------|-------------|--------------------------|
| Title | The Need For Economically Viable & Eco-Friendly Road Construction | Author | Anurag Singla | Country | India | View | DOWNLOAD |
| Title | A Literature Review on Foundary Sand Concrete | Author | Ramniwas | Country | India | View | DOWNLOAD |
| Title | आधुनिक इतिहास में वैश्वीकरण | Author | डॉ. विशाल कुमार शर्मा | Country | India | View | DOWNLOAD |
| Title | गाँधीवाद तथा नमक सत्याग्रह | Author | डॉ. मो. अजहर सुलैमान | Country | India | View | DOWNLOAD |
| Title | वर्तमान शोध परिदृश्य में अंतः अनुशासनिकता, अंतर | Author | पुष्पा बाई | Country | India | View | DOWNLOAD |
| Title | Metals in the Discharge Water of Foundries in Industrial Area of Palus of Sangli District (M.S.) India | Author | Dr. Pore Sanjay Vishnu | Country | India | View | DOWNLOAD |

Metals in the Discharge Water of Foundries in Industrial Area of Palus of Sangli District (M.S.) India

Dr. Pore Sanjay Vishnu

Associate Professor & Head, Department of Chemistry,
Bharati Vidyapeeth's, Matoshri Bayabai Shripatrao Kadam Kanya Mahavidyalaya Kadegaon. Dist. Sangli

ABSTRACTS

Water plays an important role for existence of all kingdoms. The demand of water is increasing for drinking, irrigation and industrial purposes due to increase in the population. Palus is located on the bank of river Krishna and it is also known for grapes, sugarcane producing land with industrial zone. Due to agricultural waste, excess use of fertilizers and anthropogenic activities, the drainage discharge, poor sanitation causes the deterioration of the ground water. The objective of this research was to study the water quality for existence of metals in ground water of industrial area. Eight different water samples were collected and analyzed. The pH of the water samples is from 6.30 to 7.70. The parameter TDS ranges from 600.85 to 680.30 mg/L is found to be above the normal range due to deposition of solid waste. Alkalinity is ranged from 185 to 245 which is within normal range. The BOD and COD limits in between 1.50 to 7.10 and 8.30 to 31.40 mg/L respectively. The DO is from 2.056 to 4.05. The Calcium was found to be 27.50 to 80.30 mg/L, The Chloride content is from 40.50 to 99.60 mg/L. Electrical Conductivity is in between 510.00 to 1030.38 umhos/cm. Hardness of the sample under study is from 130.50 to 320.48. The magnesium is in between 11.00 to 49.00 mg/L. The Sodium and Sulphate is in between 20.36 to 70.10 and 55.90 to 140.56 mg/L respectively. The Iron, Manganese, Cobalt, Lead and Antimony were analyzed using atomic absorption spectrophotometer. The metal Iron ranges from 1.0230 to 1.0960 mg/L. The excess amount of iron is due to ten different foundries. The Cobalt is in the just above the normal range that is from 0.5060 to 0.6390 mg/L. The Manganese is in between the 0.1630 to 0.1925 mg/L but within tolerable limit. From the study it is concluded that, all water samples have parameters within normal range except metal Iron and TDS as prescribed by world health Organization and environmental protection agency limit.

Keywords: Metal, Foundries, Ground water, M.I.D.C, Palus, Parameters. Etc.

INTRODUCTION

Metals are dissolvable cations in water, variable in concentration and in their types and differs from source to source and area to area. They are beneficial for human beings, animals and plants and also when taken in specific amount as approved by environmental protective agencies and world health organization. Although a percentage of these metals are fundamental as micronutrients, their high % in the way of life can cause hazardous to aquatic biological systems.^[1,2] Overwhelming metals are for the most part alluded to as those metals which have a particular thickness in excess of 5 g/cm³ and unfavorably influence the earth and living system life.^[3] These metals are essential to keep up different biochemical and physiological capacities in living life forms when in low range, Metal become poisonous when they surpass certain edge values. Substantial metals are critical natural toxins and their harmfulness is an issue of expanding importance for biological, developmental, nourishing and ecological reasons.^[4,5] Such toxic metals enter the earth by regular and anthropogenic methods. Such sources include characteristic enduring of the earth crust, mining, soil disintegration, mechanical release, urban runoff, sewage effluents, insecticides and pesticides applied to plants, and various others.^[6] Foundries in the industrial area is one of the source of metals .

Iron is the most inexhaustible metal in the world's covering. Naturally it is the most significant supplement for most living animals as it is the cofactor for some essential proteins and catalysts.^[7] Excess of iron take-up is a difficult issue in meat eating nations and it builds the danger of disease. Laborers who are presented to asbestos that contains practically 30% of iron are at high danger of asbestosis, which is the second most significant reason for lung malignant growth.^[8] It is said that

asbestos related malignant growth is connected to free radicals. Free intracellular iron can likewise advance DNA harm. Iron can start disease for the most part by the procedure of oxidation of DNA particles.^[9]

Lead poisoning results from ingestion of lead-containing materials, for example, paint or water which has remained in lead funnels. Harm can happen from inward breath of exhaust from consuming stockpiling batteries or patch. Despite, there is no uncertainty that lead is truly toxic to individuals and proof collect that notable varying impacts bring about various human creatures that have ingested comparative sums. The vast majority of the retained lead is put away in the bones, blood or mind. Lead colic is exposed by serious stomach problem. Harm to the mind can takes place in kids. It is known to cause spasms, mental impediment and even passing. It is likewise realized that lead is hurtful to the kidney and lasting neurological damage.^[10]

Antimony found normally as a sulfide mineral, stibnite (Sb₂S₃) and valentinite (Sb₂O₃).^[11] It was related with lead intoxication, with side effects counting migraine, stomach, clogging, colic, aversion for nourishment, loss of hunger, little mouth ulcers with salivation, dazedness, loss of weight, albuminuria, and glycosuria.^[12] Cobalt can accumulate by plants and creature so scattering of this component is expansive in human environment. When this component surpasses, it could be hazardous for human health.

Lethal dosages of cobalt cause terrible impact, for example, asthma, pneumonia, regurgitating, vision issues, and health issues.^[13] Thyroid harm, brevity of breath, nodular fibrosis, permanent handicap and death. Likewise weight loss, dermatitis, and respiratory disorders are other effects of this component.^[14]

Manganese (Mn) is one of the most plenteous components in the worlds outside.^[15] It is a cofactor for various enzymatic reactions associated with phosphorylation, cholesterol and unsaturated fat combination. In spite of its essential nature, Manganese has been known as a neurotoxin for about 150 years.^[16] Manganese additionally assume a basic job in the resistant framework, in the guideline of cell vitality, in bone and connective tissue development and in blood thickening. In the cerebrum, Manganese is a significant cofactor for an assortment of chemicals, including the cancer prevention agent catalyst superoxide dismutase, and for compounds associated with synapse amalgamation and digestion.^[17]

Study Area:

Palus taluka is located on bank of river Krishna and this has one of the fertile soil in Sangli district. Palus is also known for grapes, sugarcane producing land. It is rapidly growing city on account of trade, education, industrial and agricultural practices located at 17°5'59"N latitude and 74°26'56"E longitudes consisting of eight foundries in its industrial area. The majority of industries are Foundries.

METHODOLOGY

Sample Collection:

Samples were collected from different areas of eight foundries from industrial area under study for the analysis of metals and also to check physicochemical parameters such as TDS, salinity, pH electrical conductivity, chlorides and sulphate ions. deionized water.^[18] The volume was decreased to around 15 to 20 ml by warming the mixture.^[19] At room temperature, the digested samples are cooled and then filtered through filter paper (WhatmanNo2). The last volume was changed in accordance with 100 ml with double distilled water and kept for examination.

RESULTS AND DISCUSSION

Table of Metal concentrations

| Samples | Fe | Co | Sb | Pb | Mn | Ca | Mg | Na | K |
|-------------------------------|--------|--------|--------|--------|--------|------|------|------|------|
| Shri. Kedar Metal Foundries | 0.7997 | 0.5989 | 4.9936 | 2.189 | 0.1499 | 20.3 | 3.22 | 3.71 | 1.69 |
| Tej Steel & Alloys | 0.9921 | 0.6093 | 5.9987 | 1.6955 | 0.496 | 25.9 | 3.43 | 2.72 | 1.02 |
| Vikrant Metal Industries | 0.8982 | 0.5889 | 4.3927 | 1.2993 | 0.1591 | 26.7 | 2.79 | 3.02 | 1.26 |
| Shri. Laxmi cast. | 0.7733 | 0.5982 | 5.4822 | 2.7408 | 0.1283 | 21.9 | 2.19 | 3.16 | 1.19 |
| Sawant Steel & Alloys | 0.8329 | 0.6197 | 5.4282 | 1.7621 | 0.3954 | 23.7 | 3.32 | 2.80 | 1.48 |
| Anand Industries | 0.7946 | 0.6326 | 6.1127 | 2.6091 | 0.1426 | 20.8 | 2.77 | 3.01 | 1.54 |
| Unique Hydrotech | 0.7898 | 0.6384 | 6.8981 | 1.8022 | 0.1262 | 24.3 | 3.01 | 2.90 | 1.46 |
| Sujata Engineering Associates | 0.6865 | 0.6131 | 5.4926 | 1.7621 | 0.489 | 23.2 | 3.12 | 3.17 | 1.33 |

Iron concentration:

It is more than EPA and WHO limits. According to studies it was reported that free intracellular iron can likewise advance DNA harm. Iron can start disease for the most part by the procedure of oxidation in DNA particles.

Cobalt concentration:

It is more than EPA and WHO limits. According to studies it was reported that lethal dosages of cobalt cause terrible impact, for example, asthma, pneumonia, regurgitating, vision issues, and hearth issues.

Antimony concentration:

It is more than EPA and WHO limits which was related with side effects counting migraine, stomach, clogging, colic, aversion for nourishment, loss of hunger, little mouth ulcers with salivation, dazedness, loss of weight.

Lead concentration:

It is more than EPA and WHO limits which causes damage to the kidney and lasting neurological damage.

Manganese concentration: It was less than EPA and WHO limits. It was reported that manganese is a significant cofactor for an assortment of chemicals, including the cancer prevention agent catalyst superoxide dismutase, and for compounds associated with synapse amalgamation and digestion. Sodium

Magnesium & Potassium Concentration:

All are within normal limit as per the Who and EPA guidelines.

Table for physico-Chemical parameters.

| Sr. | Samples | pH | TDS | Salinity | Conductivity ($\mu\text{S}/\text{cm}$) | Cl | SO ₄ ⁻ |
|-----|-------------------------------|-----|------|----------|--|-------|------------------------------|
| 1 | Shri. Kedar Metal Foundries | 7.6 | 0.28 | 0.23 | 591 | 50.2 | 9.63 |
| 2 | Tej Steel & Alloys | 7.8 | 0.23 | 0.14 | 482 | 48.3 | 9.44 |
| 3 | Vikrant Metal Industries | 8.3 | 0.24 | 0.19 | 57 | 52.2 | 8.89 |
| 4 | Shri. Laxmi cast. | 8.1 | 0.73 | 0.24 | 1124 | 50.1 | 8.63 |
| 5 | Sawant Steel & Alloys | 8.4 | 0.26 | 0.15 | 541 | 51.3 | 9.16 |
| 6 | Anand Industries | 8.2 | 0.22 | 0.21 | 483 | 50.2 | 8.77 |
| 7 | Unique Hydrotech | 7.7 | 0.81 | 0.43 | 1200 | 49.6 | 8.23 |
| 8 | Sujata Engineering Associates | 7.9 | 0.78 | 0.29 | 721 | 51.98 | 9.22 |

pH: It is within normal limit as per the guidelines by EPA and WHO.

TDS: TDS of all water samples were within the range of EPA and WHO limits.

Salinity: The salinity of all water samples were within the range of EPA limits.

Conductivity: Conductivity of samples was higher than WHO limits.

Chlorides: Chlorides are within normal limit for all foundries as per the guidelines by EPA and WHO

Sulphates: Sulphates are within normal limit for all foundries as per the guidelines by EPA and WHO

CONCLUSION

The chemical analysis reveals that, all physico-chemical parameters of water samples were within the range of EPA and WHO limits. The studies revealed that different sampling sites have different concentrations of the metals. The level of certain substantial metals was alarmingly higher in all eight zones which were considered for testing. Keeping in view the health risk the significant levels of metals when enter the human digestion, measures ought to be taken to limit these levels in the spotless waters to reduce the upcoming dangers.

ACKNOWLEDGEMENT

Author expresses his sincere thanks to the Managing Directors of the all Foundries in Palus industrial are for supplying the samples for analysis from time to time as per the requirement and Principal of Bharati Vidyapeeth's Matoshri Bayabai Shripatrao Kadam Kanya Mahavidyalaya Kadegaon for providing necessary facilities during the course of this research work.

REFERENCES

- [1]. Prabu, P. C. Impact of heavy metal contamination of Akaki River of Ethiopia on soil and metal toxicity on cultivated vegetable crops. *Electronic Journal of Environmental, Agricultural & Food Chemistry*, 2009; 8(9).
- [2]. Kane, S., Lazo, P., & Vlora, A. Assessment of heavy metals in some dumps of copper mining and plants in Mirdita Area, Albania. In *Proceedings of the 5th International Scientific Conference on Water, Climate and Environment, Ohrid, Macedonia*, 2012.
- [3]. Järup, L. Hazards of heavy metal contamination. *Br Med Bull*, 2003; 68(1): 167-182.
- [4]. Jaishankar, M., Mathew, B. B., Shah, M. S., & Gowda, K. R. S. Biosorption of few heavy metal ions using agricultural wastes. *Journal of Environment Pollution and Human Health*, 2014; 2(1): 1-6.
- [5]. Nagajyoti, P. C., Lee, K. D., & Sreekanth, T. V. M. Heavy metals, occurrence and toxicity for plants: a review. *Environmental chemistry letters*, 2010; 8(3): 199-216.
- [6]. Yu, M. H., Tsunoda, H., & Tsunoda, M. *Environmental toxicology: biological and health effects of pollutants*. crc press, 2016.
- [7]. Albretsen, J. The toxicity of iron, an essential element. *Veterinary Medicine-Bonner Springs Then Edwardsville*, 2006; 101(2): 82.
- [8]. Nelson, R. L. Dietary iron and colorectal cancer risk. *Free Radical Biology and Medicine*, 1992; 12(2): 161-168.
- [9]. Bhasin, G., Kauser, H., & Athar, M. Iron augments stage-I and stage-II tumor promotion in murine skin. *Cancer letters*, 2002; 183(2): 113-122.
- [10]. Snyder, R. B., Wuebbles, D.J., Pearson, J. E., and Ewing, B. B. *A StLead. Institute for Environmental Study*, State of Illinois, IIEQ, Document No: 717. United state of American, 1971.
- [11]. McCallum, R. I. Occupational exposure to antimony compounds. *Journal of Environmental Monitoring*, 2005; 7(12): 1245-1250
- [12]. Oliver, T. Diseases of occupation from the legislative, social and medical points of view. Methuenn and Company. 1908.
- [13]. Year, F. Agency for Toxic Substances and Disease Registry, 2013.
- [14]. Raffn, E., Mikkelsen, S., Altman, D. G., Christensen, J. M., & Groth, S. Health effects due to occupational exposure to cobalt blue dye among plate painters in a porcelain factory in Denmark. *Scandinavian journal of work, environment & health*, 1988; 378-384.
- [15]. ATSDR, T. ATSDR (Agency for toxic substances and disease registry). *Prepared by Clement International Corp., under contract*, 2000; 205: 88-0608.
- [16]. Aschner, M., Guilarte, T. R., Schneider, J. S., & Zheng, W. Manganese: recent advances in understanding its transport and neurotoxicity. *Toxicology and applied pharmacology*, 2007; 221(2): 131-147.
- [17]. Cobbina, S., Duwiejuah, A., Quansah, R., Obiri, S., & Bakobie, N. Comparative assessment of heavy metals in drinking water sources in two small-scale mining communities in northern Ghana. *International journal of environmental research and public health*, 2015; 12(9): 10620-10634.
- [18]. Sante, K. A., Agusa, T., Subramanian, A., Ansa- Asare, O. D., Biney, C. A., & Tanabe, S. Contamination status of arsenic and other trace elements in drinking water and residents from Tarkwa, a historic mining township in Ghana. *Chemosphere*, 2007; 66(8): 1513-1522.
- [19]. Aschner, M., Guilarte, T. R., Schneider, J. S., & Zheng, W. Manganese: recent advances in understanding its transport and neurotoxicity. *Toxicology and applied pharmacology*, 2007; 221(2): 131-147