

Cancer Science & Pediatrics 2019: Remobilization potential of metallic elements (Cu, Zn, As, Cd, and Pb) from amended mine soil under unsteady-state seepage conditions - Manikonda Prakash Rao - Osmania University, India

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The objective of the paper is to create awareness among people about alternative and complimentary methods to protect themselves from various respiratory diseases including throat and lung cancers. The diseases cause the following changes in airways such as inflammation: acute inflammation is a defense process whereas chronic inflammation is a disease process; hyper secretion of mucus, which is the result of goblet cell hyperplasia in respiratory mucosa and is a prominent feature of inflammation. They go together. Bronchospasm is an additional factor in asthma patients. Chronic mucus hyper secretion is a potential risk factor for an accelerated loss of lung function. The thick viscous mucus in the lungs will be conducive to pathogens. Continued inflammation and mucus hyper secretion may significantly contribute to transformation of normal cells into pre-cancerous cells and later into cancerous cells i.e. the scope for series of mutations on genes may get increased. Exercise is a potent medication in history.

It can be used as a tool to manage various respiratory diseases including throat and lung cancers by cleaning upper airway passages, mouth, nose and pharynx: the primary sites of colonization of pathogens and the sinuses: the way stations to the brain. These exercises should be practiced with hypertonic solution i.e., a solution having greater osmotic pressure than that of cells or body fluids and draws water out of cells thus inducing plasmolysis. Physical, aerobic and yogic exercises help in strengthening the inspiratory and expiratory muscles. Any mucus related respiratory health problem commences from upper airway passages and spread to trachea bronchial tree as they constitute only one pathway.

The conciliatory clearance mechanism becomes defunct when excess and sticky mucus forms. Once the upper airway passages are cleaned of it, the defunct cilia become active and ciliate mucus towards mouth, and it can be pushed out easily. The upper airway passages and the bronchial airways get cleaned from excess and sticky mucus. The diseases originating from its pathway come under control. The exercises are based on the concept: once the offending factor, excess mucus is removed, the origin of it, Inflammation gets resolved. As a result of management of the above two factors, the gene damaging effect may get reduced i.e., the scope for series of mutations on genes may get reduced.

Recently observed rapid climate changes have focused the attention of researchers and river managers on the possible effects of increased flooding frequency on the mobilization and redistribution of historical pollutants within some river systems. This text summarizes regularities in the flood-related transport, channel-to-floodplain transfer, and storage and remobilization of heavy metals, which are the most persistent environmental pollutants in river systems.

Metal-dispersal processes are essentially much more variable in alluvia than in soils of non-inundated areas due to the effects of flood-sediment sorting and the mixing of pollutants with grains of different origins in a catchment, resulting in changes of one to two orders of magnitude in metal content over distances of centimetres. Furthermore, metal remobilization can be more intensive in alluvia than in soils as a result of bank erosion, prolonged floodplain inundation associated with reducing conditions alternating with oxygen-driven processes of dry periods and frequent water-table fluctuations, which affect the distribution of metals at low-lying strata.

Moreover, metal storage and remobilization are controlled by river channelization, but their influence depends on the period and extent of the engineering works. Generally, artificial structures such as groynes, dams or cut-off channels performed before pollution periods favour the entrapment of polluted sediments, whereas the floodplains of lined river channels that adjust to new, post-channelization hydraulic conditions become a permanent sink for fine polluted sediments, which accumulate solely during overbank flows. Metal mobilization in such floodplains takes place only by slow leaching, and their sediments, which accrete at a moderate rate, are the best archives of the catchment pollution with heavy metals.