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Journal Name:	Journal of Geography, Environment and Earth Science International
Manuscript Number:	Ms_JGEESI_95314
Title of the Manuscript:	Diacetyl - A Critical Safety Review of Twenty Years of Science Defining the Flavoring's Inhalation Hazards Association with Chronic Irreversible Lung Disease
Type of the Article	Review Article

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound. To know the complete guideline for Peer Review process, reviewers are requested to visit this link:

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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
<p>Compulsory REVISION comments</p> <ol style="list-style-type: none"> 1. Is the manuscript important for scientific community? (Please write few sentences on this manuscript) 2. Is the title of the article suitable? (If not please suggest an alternative title) 3. Is the abstract of the article comprehensive? 4. Are subsections and structure of the manuscript appropriate? 5. Do you think the manuscript is scientifically correct? 6. Are the references sufficient and recent? If you have suggestion of additional references, please mention in the review form. <p><u>(Apart from above mentioned 6 points, reviewers are free to provide additional suggestions/comments)</u></p>	<p>The author has taken much pains in collecting the information which is exhaustive that has happened in the field of Flavouring's Inhalation Hazards Association with Chronic Irreversible Lung Disease which is collected with Diacetyl a chemical compound having Butterfly flavour that is being used in many of the food products. However, the author did not made any positive attempt in highlighting the review work in a proper perspective so that the readers will have the inclination in growing through the subject though it is a burning problem in the society long since.</p> <p>Following are my suggestions, if implemented the article will have a positive outlook and readers attractive.</p> <p>Suggestions:</p> <ol style="list-style-type: none"> 1. Aim: "An association between both diacetyl and butter flavouring mixtures and lung disease." (Page No. 1 in abstract line nos. 16 & 17) 2. Object: "Whether Diacetyl or butter flavours containing diacetyl causes Occupational or Consumer Lung Disease, more specifically BO (i.e General causation) - Whether specific levels of inhaled or inhaled diacetyl or butter flavours containing diacetyl are associated with chronic lung disease – A review with reference to number of scientific articles and literature that is available since twenty years". (Page No. 1, Line Nos. 11 to 14) 3. Findings: The author did not mention from the study what are the findings that are appropriate to the title of the article. I give below some of the findings identified from the article so that they can be placed separately. <ol style="list-style-type: none"> a. There is insufficient evidence to conclude general causation between exposure to diacetyl or butter flavouring and lung disease. (Page No. 1 Line Nos. 17 to 19) b. Diacetyl is also common and naturally occurring air pollutant from the fermentation process of the human skin (perceperation/sweet) especially around the head, neck and feet producing an unpleasant (to some) body odour in small concentrations of five – 6000ppb (mandom, 2007; hara, 2014; keita, 2016; lawless et al, 1994) (Page No. 2 Line Nos. 15 to 18) c. The Flavour and Extract Manufacturers Association (FEMA) reported that the Research Institute for Fragrance Materials (Opdyke and Moreno, 1977) found that the acute dermal LD50 in Rabbits was greater than 5000mg / kg – body weight diacetyl. Irritation was also evaluated as part of the studyedema (FEMA, 2007) (Page No. 2 2nd Para under Acute Animal Toxicity) d. No mortality occurred at the low concentration group, where as all animals died following exposure to the mid and exposure concentration of diacetyl vapour to this Wistar Rats (Page No. 3, 2nd Para, lines 1 to 3) e. Morgan et al, 2006 subjected mice to at the intermediate dose (Page No. 3 4th Para) f. In another investigation by Hubbs et al, 2008, the finding was, "Diacetyl Inhalation caused Epithelial Necrosis and Supturative to Fibrosuppurative Inflammation in the Nose, Larynx, Trachea, and Bronchi. Bronchi exhibited affects at diacetyl concentrations of 294.6 ppm are greater, and the trachea and larynx exhibited affects at diacetyl concentrations of 224ppm are greater". (Page No. 4 under Animal Toxiciti studies) g. Niosh Researchers (Hubbs et al., 2022) examined the hypothesis that vapours of butter flavouring used in the manufacturing of selected microwave popcorn and other foods can produce air way injury in rats (Page No. 5 Line Nos. 2 to 4) 	

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	<p>h. Butter flavouring containing 285-371 ppm diacetyl caused necrosuppurative rhinitis affecting all four levels of the nose. Controls were unaffected. (Page No. 5 Line Nos. 15, 16, 17)</p> <p>i. Concentrations of butter flavouring that can occur in the manufacturing of foods are associated with epithelial injury in the nasal passages and larger pulmonary air ways of rats. (Page No. 5 Line Nos. 17, 18, 19)</p> <p>j. The researchers concluded that acute exposure to diacetyl alone was sufficient to cause Upper Respiratory Tract Epithelial Necrosis in Rats at concentration of 198.4ppm or higher (Page No. 5 2nd Para)</p> <p>k. Hubbs et al, 2008 reported that both pulsed and continuous exposure patterns caused epithelial injury. The authors contended that these findings were consistent with the conclusion that <u>"Inhale Diacetyl is a Respiratory Hazard"</u> (Page No. 6 2nd para)</p> <p>l. The other finding that the NOAEL for a 6-h exposure to butter flavouring lies below the levels used in the experiment. However, it could be argued that the low level was thousands of times higher than where they should have started for a more realistic experiment (Page No. 6 Last Para Last Line, Page No. 7 Line Nos. 1 to 3)</p> <p>m. The prevalence of Respiratory Symptoms a relationship could not established between lung function abnormalities and exposure to diacetyl (Vanrooy et al., 2005, 2007) (Page No. 7 2nd Para)</p> <p>n. NIOSH Researchers (Kullman et al. 2005) performed another study using the Jasper GML Plant Data focusing on the characterization of potential respiratory exposures at the plant The authors pointed to diacetyl as a contributor to observed Lung disease (Page No. 8 2nd Para Last)</p> <p>o. NIOSHI Researcher (Boyl Stein et al., 2006) assessed diacetyl emissions and air borne dust levels from butter flavouring used by several microwave popcorn manufacturing companies The researchers reported that diacetyl was one of the most abundant compounds found in all the flavourings The findings of the author is that, "Using flavourings with lower diacetyl emissions and to implement engineering controls to minimize exposures will reduce the respiratory problems of the workers considerably" (Page No. 9 2nd Para)</p> <p>p. In 2012, Egilman et al. reported it causes lung disease, including Bronchiolitis Obliterans (BO) in flavourings and pop corn manufacturing workers. (Page No. 13, Line Nos. 1 to 5)</p> <p>q. The 2014 Surgeons General's BO was not mentioned as a smoking-related disorder. (The author should mention from the report the actual finding that is related to smoking and diacetyl and tobacco) (Page No. 21 Para No. 2)</p> <p>r. The level of diacetyl is a smoker is exposed to in cigarettes with natural or flavoured tobacco is approximately 100 times the highest levels of diacetyl reportedly measured in the Jasper GML Plant Air samples (Page No. 21 Para No. 3)</p> <p>The above findings are few but it is mandatory on the part of the author to bring out all the findings together that are related to flavorings inhalation hazards associated with chronic irreversible lung diseases in One Para so that the object of the article is achieved.</p> <p>4. Analogy: In the analogy para, the author should bring out her own analogy with respect to something that she wants to compare her own thought. In the para it was mentioned that there are number of toxic substances that are recognized in the scientific and medical literature as known causes of Obstructive Lung Disease and BO. Diacetyl is not structurally similar to any of those substances.</p>	
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	<p>Instead of mentioning some research scholar's suggestions, the author should bring out her own analogy that is appropriately suited to the article, otherwise this analogy will not expose any relevant information.</p> <p>5. Conclusion: As I understood from the article the author brought out the tests and findings of other authors intoto without giving any reasoning or explanation from the authors side. In a review article it is important, <u>after reviewing the available literature on the subject, the author is supposed to give her/his own remarks / suggestions / findings that are constructive.</u></p>	
Minor REVISION comments 1. Is language/English quality of the article suitable for scholarly communications?		
Optional/General comments		

PART 2:

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Are there ethical issues in this manuscript?	<i>(If yes, Kindly please write down the ethical issues here in details)</i>	

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