

Gordon A. Irons, Ph.D., P.Eng. FCIM, FCAE,  
Emeritus Professor

May 10, 2021

Mr. Gregory Kelly  
Zero Planet Waste  
Newberry, South Carolina

Dear Mr. Kelly,

I spent my career teaching, investigating, and modelling metallurgical processes at McMaster University. Until my retirement in 2014, I was the Director of the McMaster Steel Research Centre. You asked me to give my opinion on the South Carolina Department of Health and Environmental Control calculation of the emission risk from Newberry Recycling operation reported in April 2021.

One of the calculations was based on emissions data from scarfing steel ingots in steel plant. In this process, hot steel slabs are blasted with oxygen jets to remove minor surface defects. The oxidation of the steel provides the heat for the process, so no additional fuel is used. The aim is to remove as little steel as possible, but majority of the particulates are iron oxides. This is quite different from oxy-fuel cutting of obsolete scrap which cuts through the scrap and creates particulates from the fuel and steel coatings and surface contaminants.

The other calculation for particulates was based on liquid propane combustion for boiler applications. While this calculation includes the particulates from propane combustion, it is even more different from cutting scrap.

I can certainly appreciate the difficulty in finding a relevant emission study for comparison because of the complexity of obsolete scrap cutting (steel coatings, paint, grease and oil coatings and the type and amount of cutting required per ton). There is some guidance on the important issues from the UK Health and Safety Executive:

[https://www.hse.gov.uk/foi/internalops/ocs/600-699/668\\_30/668\\_30id.htm](https://www.hse.gov.uk/foi/internalops/ocs/600-699/668_30/668_30id.htm)

This document, mainly concerned with worker safety, shows that cutting obsolete scrap poses many environmental risks to the workers (NO<sub>x</sub>, hexavalent chromium, lead, and mercury, for example). I do not know how these are regulated in South Carolina. Furthermore, due to the proximity of residential areas to the outdoor Newberry Recycling work site, there is the potential for these toxic chemicals to be spread to the community. Again, I do not know how these are regulated in South Carolina, but I am raising the question about these pollutants in addition to the dust clouds from the work site that you mentioned. I hope you can find some answers to these questions.

Sincerely



Gordon Irons