Scoping Questions 3 (Rick Hall.

1. The smelter's emissions will negatively affect all vegetable and fruit gardens within many miles of the proposed smelter location. Exposure to air pollutants negatively affects vegetable and fruit plants and could potentially make them unhealthy to consume. The burning of coal and other fossil fuels gives rise to various chemical pollutants such as SO_2 (sulfur dioxide), NOx (nitrogen oxides), as well as a variety of other hydrocarbons. These pollutants can become injurious to plants depending on concentration and duration of exposure. Air pollution injury to vegetation will negatively influence plant growth and development causing decreases in yield. How will the Smelter effect the fruits and vegetables gardens within the wrath of the toxic emissions pollution it will create?

2. The polluting gases and emissions from the proposed smelter will negatively affect all vegetable and fruit plants within the wrath of the smelter. Most of the polluting gases enter leaves of these plants through stomata, following the same pathway as CO2. NOx dissolves in cells and gives rise to nitrite ions ($NO2^-$, which is toxic at high concentrations) and nitrate ions (NO3– that enter into the nitrogen metabolism of the plant as if they were absorbed by the roots). In some cases, exposure to pollution, particularly SO2, causes stomates to close, which protects the leaf against further entry of the pollutant but also stops photosynthesis. In the cells, SO2 dissolves to produce sulfite ions, which can be toxic. How can the DOE protect this from happening to the local gardeners within the wrath of the toxic emissions of the smelter? How can the DOE protect us from our vegetables changing one single bit from prior to the smelter being constructed?

3. Tomato, watermelon, squash, potato, string beans, snap beans, pinto beans, soybeans, cantaloupe, muskmelon, alfalfa, beets, sunflower, carrots, sweet corn, gourds, green peas, turnips, grapes, peaches, and strawberries are some of the more susceptible crops to air pollution damage. All of these are very popular for home gardeners and farmers to grow and all grow very well in the area of the proposed smelter. How can you ensure that these vegetables won't be negatively impacted by the proposed smelter? How can you ensure 10 – 40 years from now the smelter won't negatively affect the vegetable plants we consume?

4. Nitrogen Oxides pollutants play a major role in the production of ozone. NOs are likely contributors to a number of environmental effects such as eutrophication. Eutrophication occurs when bodies of water undergo an increase in nutrients that reduce the amount of oxygen in the water, thereby producing an environment that is unfavorable to animal life. How will the smelter Nitrogen Oxides effect the environment in relation to this?

5. Ethylene is present in wood smoke. Ethylene pollution influences the activities of plant hormones and growth regulators, which affect developing tissues and normal organ development, without causing leaf-tissue damage. Injury to broad-leaf plants occurs as a downward curling of the leaves and shoots (epinasty), followed by a stunting of growth. Even minute amounts of this pollutant can cause severe damage to tomatoes. Tomato plants exposed to ethylene can develop plant twisting, defoliation, and bloom drop. How can you stop this from happening with the increased emissions the smelter will produce?

6. Damage to vegetable and fruit plants from air pollution is most common during hot, humid, hazy weather with little wind. Air inversions, when warm air at the surface is trapped by even hotter air in the atmosphere above, lead to build up of air pollutants that cannot disperse and, consequently, plant injury. Air inversions are very common in the area local to the smelter and the Pacific Northwest and northern Idaho as a whole. How can you be sure the smelter won't negatively affect the plants we grow and consume for food? How can you be sure this won't happen over the life of the plant?