

## **Comment 1 for San Joaquin Valley Agricultural Burning (agsjv10) - Non-Reg.**

First Name: John A.

Last Name: Paoluccio PE

Email Address: johnpaoluccio@sbcglobal.net

Affiliation:

Subject: Comments / Open Burning Reduces Air Pollution

Comment:

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May 7, 2010

Air Resources Board

"awhiting@arb.ca.gov"

Re: Notice of Public Meeting to Hear a Report on the San Joaquin Valley Smoke Management Program and Consideration of Modifications to Agricultural Burning Requirements

Subject: Comments / Open Burning Actually Reduces Air Pollution

Summary:

The following comments relate mainly to almond and related prunings. Several specific revisions to the above rule are requested.

The ARB has mainly attributed the reduction of PM2.5 since 2002 to the reduction of open burning. I suggest that the changeover to non-till operations by many almond growers and others played a more significant role in reducing PM2.5 and PM10 in the entire area than reducing open burning. The small particle dust generated by disking orchards is considerable greater than that of non-till.

The ARB current position will result in a reduction of open burning of agricultural biomass such as almond prunings. The Air Resources Board says that wood burning causes considerable air pollution and numerous restrictions are being made. They want farmers to chip prunings and disc them into the soil instead of burning them.

Chipping and allowing the wood pruning's to decay causes more air pollution than open burning of dry pruning's.

Consideration might be given to restricting open burning on "No Burn" days like they do with fireplaces. That would not be an unreasonable rule.

Each year when forest fires occur, very wet wood is burned and millions of tons of harmful GHG's are formed. In contrast, the burning of dry almond prunings is negligible in comparison. The forest departments are on the right track to divert that biomass to offset fossil fuel use. They still have to slash and burn most of the forest thinning and residue because not enough biomass power plants are available. Many of the recently published reports by the Energy Commission and the ARB are recognizing that tapping into biomass can help California reach its mandated 1/3 reduction in carbon dioxide by 2020.

It is hoped that the following information will be considered and

the District will concur that Open Burning of dry almond prunings be continued.

Comments submitted: for review and For The Record.

Thank you for the opportunity to submit written comments on the proposed amendments to the rules and regulations on Rule 4103 (Open Burning).

Before making a decision to ban open burning in favor of certain options, all pro and con issues should be addressed. By analyzing the overall air pollution caused by open burning versus the recommended options to burning such as chipping and disking the pruning chips into the soil should be considered. See comparison as shown in attached Table "A".

These pollution reductions items include the following:

1. Wood Burning - Including Open Burning of Orchard Pruning's.
2. TABLE "A" - COMPARISON of CONTAMINATES & PROBLEMS caused by:  
OPEN BURNING OF DRY WOOD Versus DECOMPOSITION.
3. PM10 & PM2.5 - Encourage non-till agricultural practices.
4. Energy - Encourage renewable energy in lieu of fossil fuel use.

#### 1. Wood Burning of Orchard Pruning's & Biomass Use

The burning of orchard pruning's results in considerably less air pollution than chipping and disking or other options available today. It is recommended that rules, on almond pruning's for example, allow for continued open burning.

Biomass holds the promise of reducing fossil fuel use and can substantially help our energy production and dependency on foreign oil. If all open wood burning were stopped, our air quality would get worse not better.

Burning dry wood is natural and good for our environment and is an important part of the cycle of life on earth. Biomass takes in carbon dioxide during growth and gives it up during decomposition. However, when wet wood is burned, incomplete combustion occurs with the release of substantial amounts of polluting GHG's. The burning of wet wood should be discouraged.

If wood is allowed to decay by natural means, including decomposition by ants, termites, fungus, microbes, etc. Then, considerable amounts of methane gas are generated and released along with other GHG's. Methane is one of the major primary airborne contaminant generated on earth.

By burning dry wood we simply release the stored solar energy and produce mainly water vapor and carbon dioxide. Better yet, waste wood can be collected, milled into pellets and used in electrical power production. Even better solutions include processing the wood pellets into clean burning torrefied wood for use in co-firing with coal or gasification processes. This allows biomass to be utilized and helps keep harmful fossil fuels in the ground.

If this wood resource were burned in a biomass plant under ideal conditions, only a very small amount of pollutants would be emitted. We would derive substantial energy and reduce our dependence of fossil fuels. A win-win situation that should be encouraged.

New technologies, inventions and processes that utilize renewable biomass offer many opportunities that can lead to a substantial reduction in fossil fuel use. These include bio-diesel, ethanol, wood pellets, torrefied wood pellets and many others. Torrefaction is one of the most promising technologies. This process involves the heat treating of wood in the absence of oxygen where almost all the water and VOC's (volatile organic compounds) are driven out. Torrefied wood can be used as a solid fuel or used in gasification or conversion to oil. Torrefaction was developed by the French

decades ago but the processing methods were inefficient and very little product was used in the energy sector. Many countries are now working on improved systems for use in electric power generation.

Note: We are also involved in this effort. As an environmental engineer and inventor of environmental products we have been involved with energy systems, air pollution and converting biomass to practical use for over 40 years. CNFbiofuel™ and CNF torrefied wood™ (formally BioCoal) is our latest patent pending invention and it holds promise of converting wood into a clean burning fuel. See [www.CNFbiofuel.com](http://www.CNFbiofuel.com) for more information.

Technology and economics do not currently allow for many other practical options for the farmer other than to burn the prunings. Wood chipping and transporting the chips to a pellet mill or biomass plant would be ideal and may soon be practical as soon as efficient biomass conversion to fuel becomes more acceptable. In the meantime, while it is not practical or economic to justify this method of energy conversion, it still best to burn the wood pruning's.

Farmers cannot allow pruning's to build up year after year, allowing them to become a fire hazard and habitat for rats and vermin in addition to the decomposition gases produced. The practice of wood chipping has had mixed reviews. Some chips add to foreign matter in harvested almonds and reduce their value. To speed breaking down the chips they can be disked into the soil but that is contrary to the non-till practices that helps reduce fuel use and keeps PM10 and PM2.5 dust down. It becomes clear that there are no simple solutions to our many environmental problems but frequently, unnecessary regulations that only look at one side of the problem can result in more harm than good.

When dry wood is burned, as in the open burning of pruning's, instant smoke and water vapor is visible along with carbon dioxide, carbon monoxide, methane and other GHG's plus ash being emitted. Dryer wood results in more complete combustion with more energy and water generated. When wood is left to decompose as in disking it into the soil, most of the biomass will be converted into considerably more methane, carbon dioxide, and other GHG's than with burning. If the fossil fuel energy of chipping and disking is included along with all the PM10 and PM2.5 generated it becomes very clear that burning dry wood is a much more earth friendly choice.

The breakdown of wood products in forests, swamps, wetlands, farms, soil and landfills are some of the main producers of methane gas in our atmosphere. The pollution from farm burning, of hard to handle orchard pruning's, is insignificant in comparison.

Restricting open burning results in considerable economic loss to the state, hurts farmers and taxpayers, and the resulting air pollution problems will become worse not better. It is in the best interest of the state that restricting open burning be curtailed until practical methods of transferring ag waste and pruning's to biomass facilities for efficient burning. In the meantime continued ag burning is far less polluting than disking and other options. Throughout the United States attempts are being made to collect methane gas from landfills, sludge, animal waste, and other biomass sources and convert it into useful energy instead of allowing it to enter the atmosphere.

Biomass is considered Renewable Energy with a zero net addition of carbon to our environment. California has hundreds of millions of tons of biomass available for future energy use. At present only about 1% is utilized for electric energy production. The practical use of this resource should be encouraged. Biomass offers the only practical near term solution to meeting our carbon dioxide

reduction goals.

In comparison, the burning of fossil fuel gas, oil and coal is considered Non-Renewable Energy and contributes 100 percent carbon compounds to our air environment. Therefore, whenever it is possible to use renewable biomass fuel instead of fossil fuels our environment will remain cleaner.

Let's relax open wood burning rules and allow farmers to continue with common sense management practices. This benefits us all with less regulation and less pollution.

2. TABLE "A" COMPARISON of CONTAMINATES & PROBLEMS caused by:  
by: OPEN BURNING OF DRY WOOD Versus DECOMPOSITION  
ITEM OPEN BURNING DECOMPOSITION

ITEM	OPEN BURNING	DECOMPOSITION
COMMENTS		
Visible Smoke		More*
Less	Minor Problem	
Water		More
Less	Good	
Carbon Dioxide		More
Less	Good	
Carbon Monoxide	Less	More*
Good		
Methane	Less	More*
Good		
Other gasses/ VOC's	Less	Much More*
Good		
Ash	More	
Less		
Soil Nutrients	Less	Much
More		
PM-10	Less	Much
More*	Major Problem	
PM-2.5	Less	Much
More*	Major Problem	
Rodent Habitat /Fleas	Less	Much
More*	Major Problem	
Fossil Fuel Use	Less	Much More*
Worst Problem		
Added Carbon Dioxide	Less	Much More *
Problem		
Expenses	Less	Much More*
Problem		
Time/Manpower	Less	More*
Problem		
Consumer Cost	Less	More*
Problem		
Adverse Health Effects	Less	More*
Problem		

Based on the above chart it would be much wiser to select open burning of dry orchard pruning's where mostly water and CO2 are produced, plus ash & some other gasses. When pruning's are stored, chipped, and then disked into the soil much more air pollution and other problems occur. Long range storage increases rat, mice, rodent and flea infestations that migrate to populated areas. Considerable PM 10 & PM 2.5 are generated due to chipping and disking chips into and disturbing the soil. Decomposition leads to the release of many greenhouse gasses. Plus 100% of the pollution from the fossil fuels used is added to our environment. All the collected suns energy is lost that could have been put to good use and a waste of a valuable biomass resource.

### 3. DUST - PM2.5 and PM10:

Significant increases in fine dust PM 10 & PM 2.5 particles enter

the air when farm practices are changed from non-till operations to disking in wood chips. The fine dust increase may easily be 10 fold or more. Many farmers have changed to non-till or reduced tilling operations and the results have proven to be very beneficial to reducing dust generation. Dust mites and other pest problems are reduced with non-till operations.

According to the University of Nebraska Institute of Agriculture and Natural Resources no-till, national cropland soil erosion has plummeted and the process can reduce soil loss by 90 to 95%. If open burning is prohibited and chipping and disking occurs, we will see a dramatic increase in PM10 and PM2.5. That is contrary to the California Health and Safety Code.

CROPS: In general, it is beneficial to keep orchards and other ag properties clean of waste biomass and minimize unnecessary equipment use. Excess fuel consumption and putting dust into the air is not helpful to plant tissue.

Farmers are constantly resorting to Best Management Practices, trying and evaluating new tested Methods, and learning how to be good stewards of the land while being more productive.

Farmers appreciate new ideas, research, safer chemicals, safer equipment and improved operations. Farmers should be allowed to decide how best to manage surface pruning's by open burning instead of chipping and disking the soil.

4 Energy - Encourage renewable energy in lieu of fossil fuel use.

Energy exists in many forms. Most of the energy we use is derived from the sun. This includes fossil fuels, biomass, wind energy and hydroelectric power. Carbon is the building block of life and is in all fossil fuels, wood, and all plant and animal life. Fossil fuels may contain 70 to 95% carbon and wood, trees and plants may have 50% carbon.

The Carbon Cycle on earth, in a simplistic example as follows: plants take in carbon dioxide during growth in sunlight. The carbon from the carbon dioxide gas is changed into a concentrated solid form that includes sugars and other plant tissue. The plant is in essence a solar battery that harnesses the sun's stored energy in condensed solid form.

When plants die, decompose or when burned, the captured carbon compounds are released back into the ambient air and the sun's energy is released. This cycle has been repeating itself for millions of years. Using biomass for fuel offers the most opportunity for the near term solution to reducing carbon dioxide concentrations.

Our firm, along with many others, is working on developing new processes to convert biomass into useful clean burning fuels. Our information is presented only as an example of potential renewable energy solutions. We are in the development stages and do not produce any product for commercial use at this time. The laboratory size product we produce is only used in determining calorific value, ash, and other properties.

The following describes our solution to the global energy and air pollution problems.

Coal is the most used and it is the dirtiest of fuels.

Considerable efforts are underway by many firms in many nations to improve Torrefaction technology that will allow for using torrefied wood as a renewable energy fuel to co-fire with and eventually replace coal. All prior art Torrefaction methods utilize hot gas or steam in a "convection" heat treatment process. We developed a unique process of "immersion conduction" of biomass in a high temperature heat transfer fluid in the absence of oxygen. This puts over 1,000 times more heat transfer molecules in direct contact

with the wood surface over convection processes. Multiple stages at different temperatures quickly make the conversion practical. California, with its tremendous investment in the use of natural gas for generating electricity has hundreds of millions of tons of biomass that is simply wasted and left to decompose each year. This renewable energy biomass could be torrefied and converted into a solid fuel or gasified to replace fossil fuel natural gas. Many other nations are now growing energy crops for that purpose. Torrefied wood has about 10,000 Btu per pound. California has over 550,000 acres of almonds in production. Approximately 2,000 pounds of green brush is generated in each acre per year. That and many other agricultural waste products could be converted to useful fuels to replace fossil fuels. Coal contains about 12,000 to 15,000 Btu per pound and is the most used but dirtiest fossil fuel in use today. No other practical renewable energy fuel exists to replace the vast amounts of coal at this time except biomass. About half the out of state electricity we use is generated from coal burning plants. Global Environmental Pollution concerns caused by the burning of "non-renewable" fossil fuels and increases in the atmospheric concentration of Carbon Dioxide are considered by many, the greatest threat to our environment today. Coal is considered the most polluting fuel as it contains many heavy metals, including sulfur, lead, mercury, and radioactive substances. Many countries use very poor grades of coal that contain considerably more toxic substances than the cleaner coal that is becoming scarcer. It may come as no surprise to learn that many of the health problems suffered today may be caused by the pollution from coal fired power plants. It is estimated that California receives over 25% of its air pollution from outside countries such as China and India. It may not be long when most of the most harmful pollution we receive originates from outside the USA. It is to the benefit to all for California to lead the way in showing the world that the use of renewable energy should be a major priority. We must address the reduction of global coal use if we ever hope to solve our Global Environmental Pollution problems.

Sincerely

John A. Paoluccio PE,  
Engineer, Inventor and Farmer

Associate companies involved in development of renewable energy fuel:

John Paoluccio Consulting Engineers, Inc. - Mechanical /  
Environmental  
Inventive Resources, Inc. - Environmental Products

CNFbiofuel, Inc. - Developing processing systems for CNF™  
torrefied wood pellets

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California Registrations: Mechanical Engineer ME15046 Fire  
Protection Engineer FP248 Agricultural Engineer AG309 and Class  
"A" General Contractor

Home: Modesto, CA 95368. Farm - Operates a small almond  
orchard.

Attachment: 'www.arb.ca.gov/lists/agsjv10/1-arb\_-\_open\_burn\_comments\_5-7-10.doc'

Original File Name: ARB - Open Burn comments 5-7-10.doc

Date and Time Comment Was Submitted: 2010-05-07 09:04:00

No Duplicates.

**Comment 2 for San Joaquin Valley Agricultural Burning (agsjv10) - Non-Reg.**

First Name: stuart

Last Name: develasco

Email Address: apercu88-selas@yahoo.com

Affiliation: discovery center children's museum

Subject: stop ag burning at long last

Comment:

The San Joaquin Valley Air Pollution Control District's report on agricultural burning is riddled with lies, false assumptions, misleading comparisons, and dishonest arithmetic. Their smokescreen, figuratively and literally, protects oldtime ag practices at the expense of public health.

When my second grader moved to Fresno, he had perfect lungs. Now, twelve years later, he has serious asthma. Endless ag burning creates tiny particles that poison us all.

Ag burning was supposed to stop in 2003. Now ag burning is supposed to stop in June, 2010. Please don't give them yet another free pass. For the sake of public health, please stop ag burning at long last.

Sincerely,  
Stuart Develasco  
Fresno

Attachment: "

Original File Name:

Date and Time Comment Was Submitted: 2010-05-26 10:06:33

No Duplicates.



**Comment 3 for San Joaquin Valley Agricultural Burning (agsjv10) - Non-Reg.**

First Name: Julee

Last Name: Malinowski-Ball

Email Address: julee@ppallc.com

Affiliation: California Biomass Energy Alliance

Subject: San Joaquin Valley Smoke Management Program

Comment:

Attached are the comments on the above mentioned item from the California Biomass Energy Alliance. The comments are accompanied by two additional attachments.

Attachment: 'www.arb.ca.gov/lists/agsjv10/5-may\_carb\_meeting\_comments.pdf'

Original File Name: May CARB Meeting Comments.pdf

Date and Time Comment Was Submitted: 2010-05-26 11:53:22

No Duplicates.

**Comment 4 for San Joaquin Valley Agricultural Burning (agsjv10) - Non-Reg.**

This comment was posted then deleted because it was unrelated to the Board item or it was a duplicate.

**Comment 5 for San Joaquin Valley Agricultural Burning (agsjv10) - 45 Day.**

First Name: Kristine

Last Name: Gross

Email Address: kriss@ppallc.com

Affiliation:

Subject: CBEA Comments Re SJVSmoke Management Program

Comment:

please see attached

Attachment: 'www.arb.ca.gov/lists/agsjv10/8-gross.pdf'

Original File Name: Gross.pdf

Date and Time Comment Was Submitted: 2010-06-02 09:35:10

No Duplicates.

**Comment 6 for San Joaquin Valley Agricultural Burning (agsjv10) - Non-Reg.**

First Name: V. John

Last Name: White

Email Address: marilyn@ceert.org

Affiliation:

Subject: Clean Power Campaign

Comment:

please see attached

Attachment: 'www.arb.ca.gov/lists/agsjv10/9-white.pdf'

Original File Name: White.pdf

Date and Time Comment Was Submitted: 2010-06-17 10:54:43

No Duplicates.

**Comment 1 for San Joaquin Valley Agricultural Burning (agsjv10). (At Hearing)**

First Name: Mark

Last Name: Arax

Email Address: senator.florez@sen.ca.gov

Affiliation:

Subject: California State Senate

Comment:

please see attached

Attachment: [www.arb.ca.gov/lists/agsjv10/7-mark.pdf](http://www.arb.ca.gov/lists/agsjv10/7-mark.pdf)

Original File Name: Mark.pdf

Date and Time Comment Was Submitted: 2010-06-01 12:50:09

No Duplicates.