AREA SOURCE REQUIREMENTS

- Does not apply to natural gas-fired units
- Applies at all facilities that are not major for MACT
- If unit burns solid waste, Incinerator Standards apply

Emission Limits for Area Source Boilers – 3 21 11 Rule

New and existing small (<10 MMBtu/hr) boiler, existing and new biomass-fired boilers, and new and existing oil-fired boilers are subject to a biennial tune-up requirement.

Subcategory	Proposed Emission Limits			Final Emission Limits March 21 2011 Rule		
	Hg, lb/TBtu	CO, ppm	PM, lb/MMBtu	Hg, lb/TBtu	CO, ppm	PM, lb/MMBtu
New Coal	3.0	310	0.03	4.8	400	0.03 (> 30 MMBtu/h) 0.42 (10 to 30 MMBtu/h)
New Biomass	–	100	0.03	–	–	0.03 (> 30 MMBtu/h) 0.07 (10 to 30 MMBtu/h)
New Oil	–	1	0.03	–	–	0.03
Existing Coal	3.0	310	–	4.8	400	–
Existing Biomass	–	160	–	–	–	–
Existing Oil	–	2	–	–	–	–

Boiler Area Source Re-Proposal

HAP/Fuel	2010 Proposal	Mar 2011 Final	Dec 2011 Re-Proposal	Factor Better
New coal-fired boiler with heat input capacity of 30 million Btu per hour or greater				
Hg Coal	3 lb/Tbtu	4.8 lb/Tbtu	22 lb/TBtu	4.6
PM Coal	0.03 lb/MMBtu	0.03 lb/MMBtu	0.03 lb/MMBtu	--
CO Coal	310 ppm at 7%O2	400 ppm at 3%O2	420 ppm at 3%O2	1.1
New coal-fired boiler with heat input capacity of between 10 and 30 million Btu per hour				
Hg Coal	3 lb/Tbtu	4.8 lb/Tbtu	22 lb/TBtu	4.6
PM Coal	0.03 lb/MMBtu	0.42 lb/MMBtu	0.42 lb/MMBtu	--
CO Coal	310 ppm at 7%O2	400 ppm at 3%O2	420 ppm at 3%O2	1.1
New biomass-fired boiler with heat input capacity of 30 millionBtu per hour or greater				
PM Biomass	0.03 lb/MMBtu	0.03 lb/MMBtu	0.03 lb/MMBtu	--
New biomass fired boiler with heat input capacity of between 10 and 30 million Btu per hour				
PM Biomass	0.03 lb/MMBtu	0.07 lb/MMBtu	0.07 lb/MMBtu	--
New oil-fired boiler with heat input capacity of 10 million Btu per hour or greater				
PM Oil	0.03 lb/MMBtu	0.03 lb per MMBtu	0.03 lb per MMBtu	--
Existing Coal units with heat input capacity of 10 million Btu per hour or greater				
Hg Coal	3 lb/Tbtu	4.8 lb/Tbtu	22 lb/TBtu	4.6
CO Coal	310 ppm at 7%O2	400 ppm at 3%O2	420 ppm at 3%O2	1.1

Key Compliance Dates

(will change with new rule)


Microsoft Office Word Document


Microsoft Office Word Document


Microsoft Office Word Document

- September 17, 2011 - Initial Notifications due
- *March 21, 2012 – Compliance date for boilers subject to a work practice or management practice standard (i.e. tune-ups).*
- *By July 19, 2012 must submit signed statement in the Notification of compliance report that you conducted a boiler tune-up.*
- *March 21, 2014 – Compliance date for*
  - *Energy Audits for existing boilers and for*
  - *Boilers subject to emission limitations to meet limits*
    - *GREENBAY MUST BEGIN PLANNING FOR COMPLIANCE NOW*
- *By July 19, 2014, Notification of Compliance Status due for*
  - *Energy Audit Completion and*
  - *Emission Limits being met (Greenbay only).*
- *New units must be in compliance upon start-up.*

CISWI Rule – Definition of Waste/non-Waste

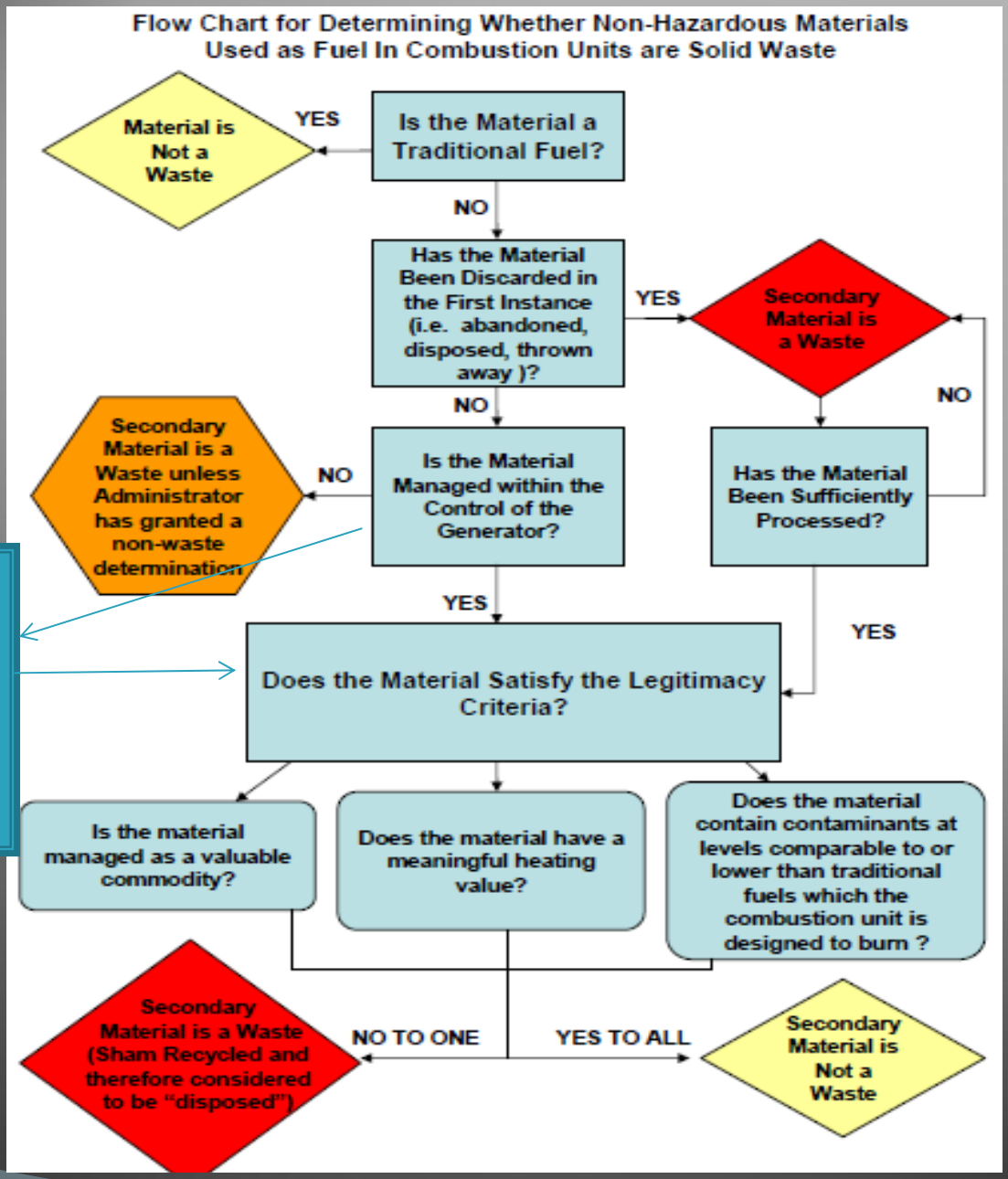
- Rule defines traditional fuels and establishes criteria for non-hazardous secondary materials that are solid wastes when burned in a combustion unit
- Could apply at any site that burns non-traditional fuels or materials in a combustion unit.
- May be a site that is Major or Minor for HAPs

CISWI Definitions – Final Rule

Rule:

- defines traditional fuels and
- establishes criteria for non-hazardous secondary materials (NHSM) that are solid wastes when burned in a combustion unit

Solid Waste Definition Final Rule Fuel Flowchart



What are Traditional Fuels?

- Fuels historically managed as valuable fuel products including fossil fuels (coal, oil, gas), their derivatives (incl. pet coke, refinery gas, synthetic fuel, coke oven gas, others) and cellulosic biomass
- Alternative fuels developed from virgin materials that can now be used as fuel products including:
  - used oil meeting specifications in 40 CFR 279.11;
  - *currently mined* coal refuse that previously wasn't usable as coal;
  - clean cellulosic biomass
- However, "To be fuels, the above materials must not have been discarded."
- Regardless of whether the materials are generated and used on site, non-hazardous secondary materials used in combustion must meet all new legitimacy criteria otherwise they have been discarded.
- So, Traditional Fuels are the only materials which do not need to meet legitimacy criteria to be non-waste

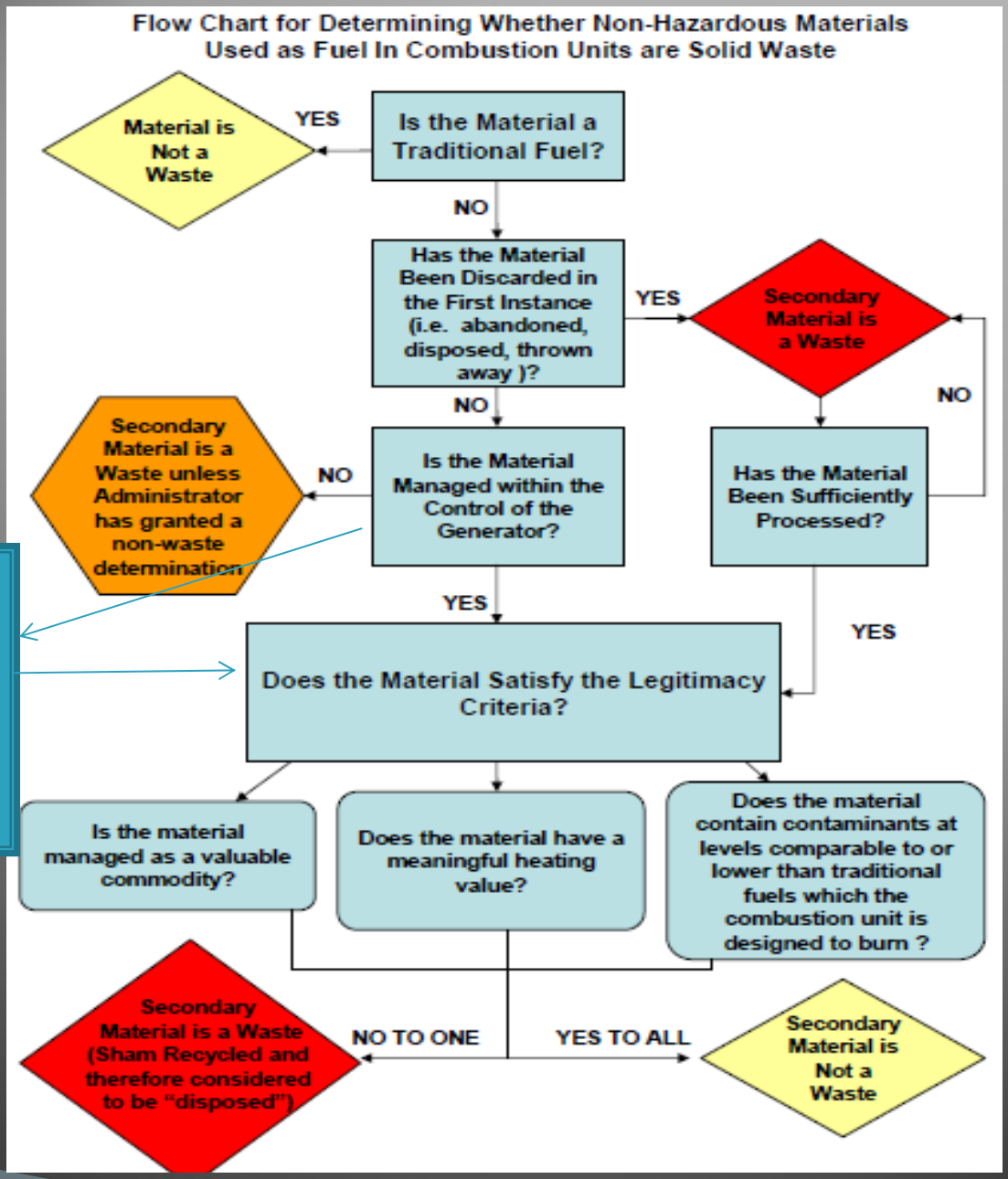
What are Traditional Fuels?

Traditional Fuels Include Clean Cellulosic Biomass which has not been discarded.

Clean Cellulosic Biomass (defined in rule) includes:

- Forest-derived biomass, biomass crops grown for energy production, crop residues such as peanut hulls and wood or clean biomass from fire clearance, disaster debris, land clearing or clean construction & demolition wood.
- "To be clean, must not have contaminants at levels atypical of virgin biomass materials."

Solid Waste Definition Final Rule Fuel Flowchart



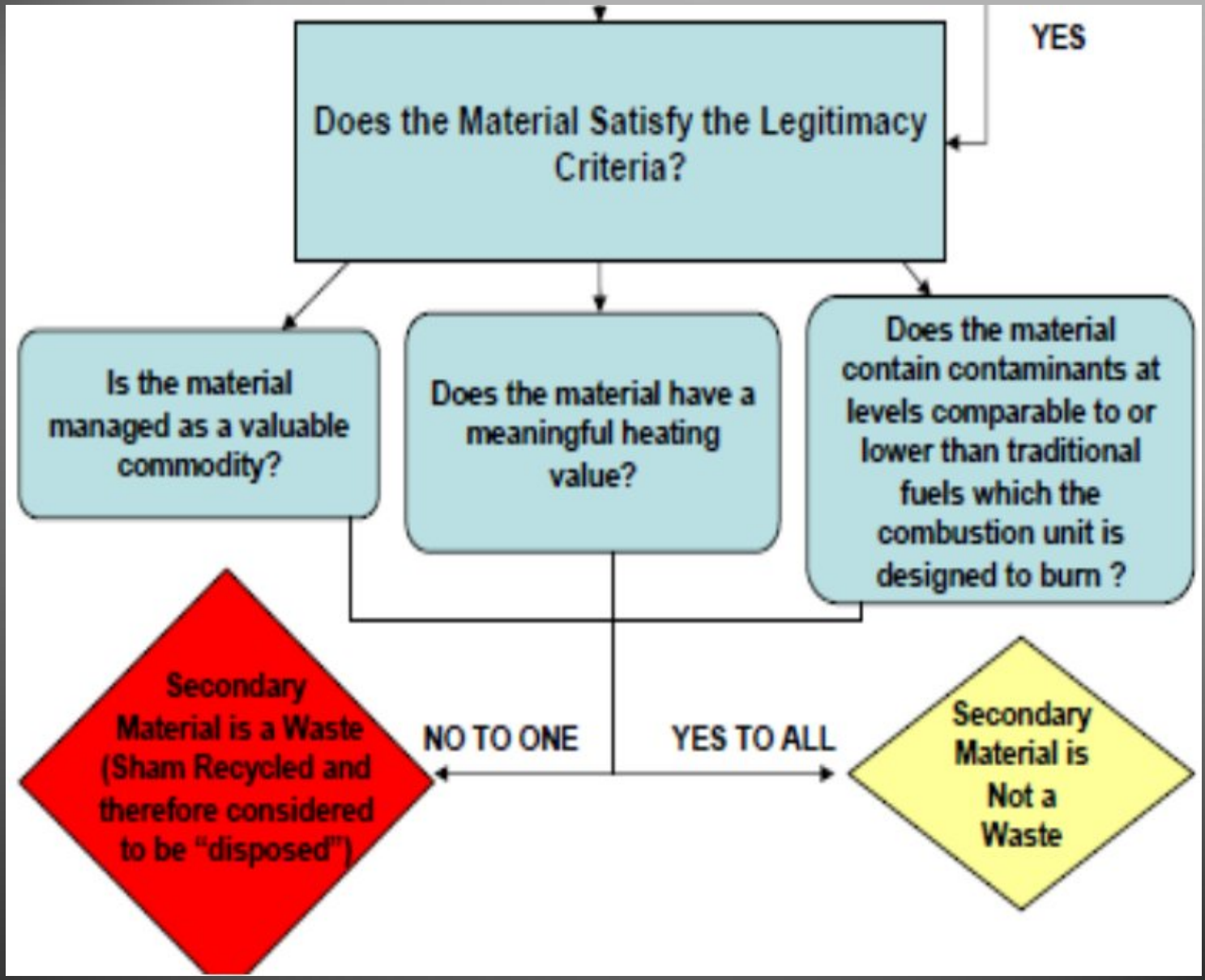
Approaches for Determinations:

Definition of fuel/ingredient (non-waste) vs. waste:

- Traditional Fuel (which was not discarded) OR
- Non-hazardous secondary materials that are not solid waste when combusted because they:
  - Remain in the control of the generator and meet ALL legitimacy criteria
  - Materials previously discarded can be "sufficiently processed" to meet legitimacy criteria and become non-waste (no petition process).
  - Non-Waste Determination Process for Materials that have not been discarded but are not managed within the control of the generator must be granted a non-waste determination from the EPA Regional Administrator in order to become non-wastes

If ANY SOLID WASTE IS Ever BURNED IN ANY UNIT regardless of unit or facility size, stringent CISWI Incinerator Requirements apply!!!

Legitimacy Criteria for Fuel/ Waste



NHSM Rule Issues:

Material must contain contaminants at levels comparable or lower than traditional fuels which the combustion unit is designed to burn

- What contaminants?
  - 187 Section 112 (b) HAPs (metals, precursors to HAPs)
  - Section 129 (a) (4) contaminants (HCl, Pb, Cd, Hg, others)
- Comparable or Lower Standard
  - Must all pollutants be comparable or lower?
- Compared to traditional fuels which the unit is designed to burn

EPA expects owners to make 196,000 Self-determinations for non-discarded wastes

Concern over Self-Determinations

Determination Must be RIGHT

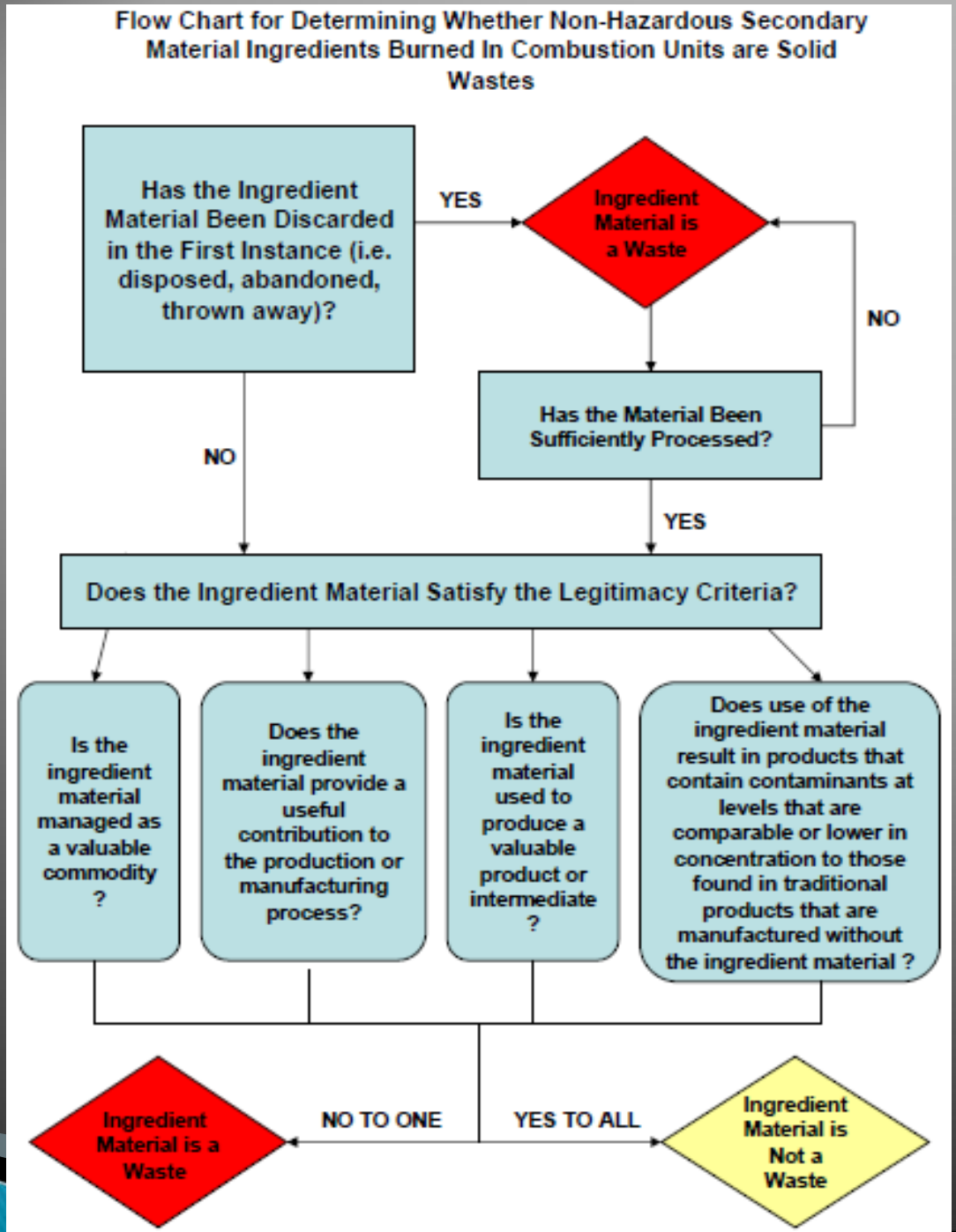
- Industry needs certainty for compliance plan
  - If material is non-waste, need to plan for Boiler MACT compliance
  - If material deemed solid waste, may choose alternate use of material vs combustion
- If Self Determination is Wrong
  - Substantial compliance penalties for not meeting CAA requirements
- Can't Afford to be Second Guessed
  - EPA history of second guessing CAA PSD Non-Applicability Determinations – substantial penalties
  - Not sufficient to discontinue combusting a material

Non-hazardous Secondary Fuels Evaluated General Conclusions (proposal)

Materials which are generally NOT Solid Waste	Materials which are generally solid waste:
Clean Biomass	Painted wood
Clean biofuels processed from Solid Waste	Treated wood materials
Wood products mill residuals within the control of the generator	Contaminated construction & demolition debris
Pulp & Paper mill residuals within the control of the generator	Sewage sludge Coal refuse in legacy coal piles
Tire Derived Fuel where steel belts & wire were removed	Whole tires or shredded tires where a significant portion of the wire has not been removed
On-Spec used oil	Off-spec used oil

N. B: Specific Evaluations of Materials are required. You cannot use EPA's evaluations as presumptions for your material. The preamble discussion on these assessments provides insight into how to evaluate materials.

Solid Waste Definition Final Rule Ingredient Flowchart



NHSM Rule Issues:

Definition of fuel/ingredient (non-waste) vs. waste

- Presumption that Materials which are not discarded are solid wastes – unless they meet all elements of EPA's new legitimacy criteria.
- In order to be legitimate fuel secondary materials MUST:
  - Be handled like a valuable commodity (like fuels)
  - Have meaningful BTU value
  - Material must contain contaminants at levels comparable or lower than traditional fuels which the combustion unit is designed to burn

Key Issues with Final Rule

- EPA did not budge on Legitimacy Criteria
  - Must fully meet all criteria or material is a waste.
  - Difficult to demonstrate levels of all contaminants in material are equal to or lower than traditional fuel.
- Materials generated and combusted on site are presumed to be discarded, unless meet all legitimacy criteria.
  - No Petition process to affirm determinations for materials managed within control of generator.
  - Compliance risk of self-determination
- Materials not managed within control of generator must petition for non-waste determination (ex. Tires & Res. Wood)
- Lack of Procedures for Petition Process Decision Making
  - Who decides (OSW/OAQPS, Fed/State? Who second-guesses?),
  - How long will determinations take? (open-ended)
- Scrap tires & Res wood must still meet legitimacy criteria

Implications

- Proposal CISWI – 176 facilities
  - 36 burn-off ovens
  - 19 small remote facilities
  - 28 solid waste incinerators
  - 40 energy recovery units
  - 53 waste burning kilns

EPA did not anticipate any additional CISWI units

However these units do not include a significant number of units which currently combust materials that are not considered solid waste today.

Volume of Secondary Materials currently non-waste

The following annual volumes may need to be land-filled in future if they are solid waste

- 86.8 Million tons of pulp and paper residue
- 164 Million tons of building related construction and demolition debris
- 92.8 Million tons of coal combustion residuals
- 109 Million tons of coal refuse
- 12.5 Million tons of secondary mill residues
- 4.6 Million tons of scrap tires
- 117 Million gallons of off-spec used oil
- 1 Million tons of foundry sand
- 87 Million cubic feet of creosote treated railroad ties

Other Unintended Consequences

Contained gas issue:

- Solid Waste means any garbage, refuse… or contained gases…
- Contained Gaseous Material meant gases that are in a container when container is combusted.
- EPA removed definition of contained gaseous material from rule and appeared to change past interpretation.
- Concern: gaseous materials in pipes fed to combustion units – if solid waste – would change CAA control requirements and costs drastically if boilers were transformed into incinerators.

Several Issues Clarified

Guidance:

- Contained Gaseous Material – May 13 2011 Letter to Tim Hunt, AF&PA
- Materials used in recirculation/reinjection processes – July 21 2011 letter to Pamela Faggert, Dominion Resources Services
- Landfill Gas – August 5, 2011 letter to Sue Briggum, Waste Management
- Off-Spec Tires – August 5, 2011 letter to Tracey Norberg, Rubber Manufacturers Assoc.
- Coal Refuse in Legacy Piles – August 15, 2011 letter to Jeff A. McNelly, ARIPPA.

NHSM Rule – Proposed Changes

- 12/23/11 FR 80458
- Proposed Revisions to CISWI and NHSM Rule
- Comments submitted 2/21/12

Proposed Changes – CISWI Waste Definition Rule

- EPA clarifies certain definitions and how to compare materials to the third legitimacy criteria
  - i.e. Whether the material contains contaminants at levels comparable to or lower than traditional fuels which the unit is designed to burn
- EPA proposes that through the petition process a material which does not meet all three legitimacy criteria may be determined to be a non-waste
- EPA proposes to conclude that resinated wood and state-managed scrap tires are non-wastes
- EPA solicits data on whether Pulp & Paper Residuals and Coal Refuse should be non-wastes

Changes Proposed to NHSM Rule

- EPA clarified in the definition of biomass (which is traditional fuel) that several materials are already included as biomass including:
  - Hogged fuel, wood pellets, untreated wood pallets, urban wood (tree trimmings, stumps and related forest-derived biomass from urban settings)
  - Byproducts of ethanol natural fermentation processes
  - Vines, orchard trees, hulls, seeds, spent grains, cotton byproducts, corn and peanut production residues, rice milling and grain elevator operation residues.
- However, EPA still stipulates that clean biomass must not have contaminants in concentrations atypical of virgin biomass materials

Changes Proposed to NHSM Rule

EPA clarified the criteria for evaluating contaminant legitimacy criteria:

- Contaminants have been defined
  - Include all 187 HAPs –CAA S. 112 (b) and 129 (a) (4) pollutants.
  - Specific contaminants have been specifically listed
  - Specific materials unlikely to be found in materials before combustion are excluded.
- EPA has revised language of legitimacy criteria used in combustion for contaminants to allow comparison of contaminants or groups of contaminants.

Groups of Contaminants

- Reconsideration Rule (12 23 11- FR 80477-80)
  - Provides an example of Groups of Contaminants:
    - Volatile Organic Compounds,
    - Semi-Volatile Organic Compounds
    - Organic Halogens
    - Cresols
    - Cyanide Compounds
    - Dibenzofurans
    - Glycol ethers
    - PCBs
    - Polycyclic Organic Matter
    - Radionuclides
    - Dioxins
- EPA presents this as one reasonable approach for grouping contaminants in this legitimacy criteria
- "Other approaches can be used for groupings if they are technically reasonable".

Using Groups of Contaminants Example

- Toluene and xylenes are present in fuel oils at concentrations of up to 380 ppm and 3100 ppm respectively.
- If a NHSM had concentrations of those two concentrations reversed: e.g. toluene 3100 ppm and xylene at 380 ppm, the material would not meet the existing legitimacy criteria because the toluene was not at a concentration comparable to or lower than traditional fuel, even though toluene is a beneficial component of fuel.
- Under the proposed grouping approach, this material would properly meet the legitimacy criteria since toluene and xylene would be in the same grouping and the combined concentration would be the same in the NHSM and traditional fuel.

Traditional Fuel Comparison

- "Traditional fuels which the combustion unit is designed to burn" provides flexibility to choose among multiple fuel options (FR 80471)
- Clarifying Language Added:
  - "In determining which traditional fuel(s) a unit is designed to burn, persons can choose a traditional fuel that can be or is burned in the particular type of boiler, whether or not the combustion unit is permitted to burn that traditional fuel. In comparing contaminants between traditional fuel (s) and a NHSM, persons can use ranges of traditional fuel contaminants compiled from national surveys as well as contaminant level data from the specific traditional fuel being replaced. Such comparisons are to be based on a direct comparison of the contaminant levels in both the NHSM and the traditional fuel (s) prior to combustion."

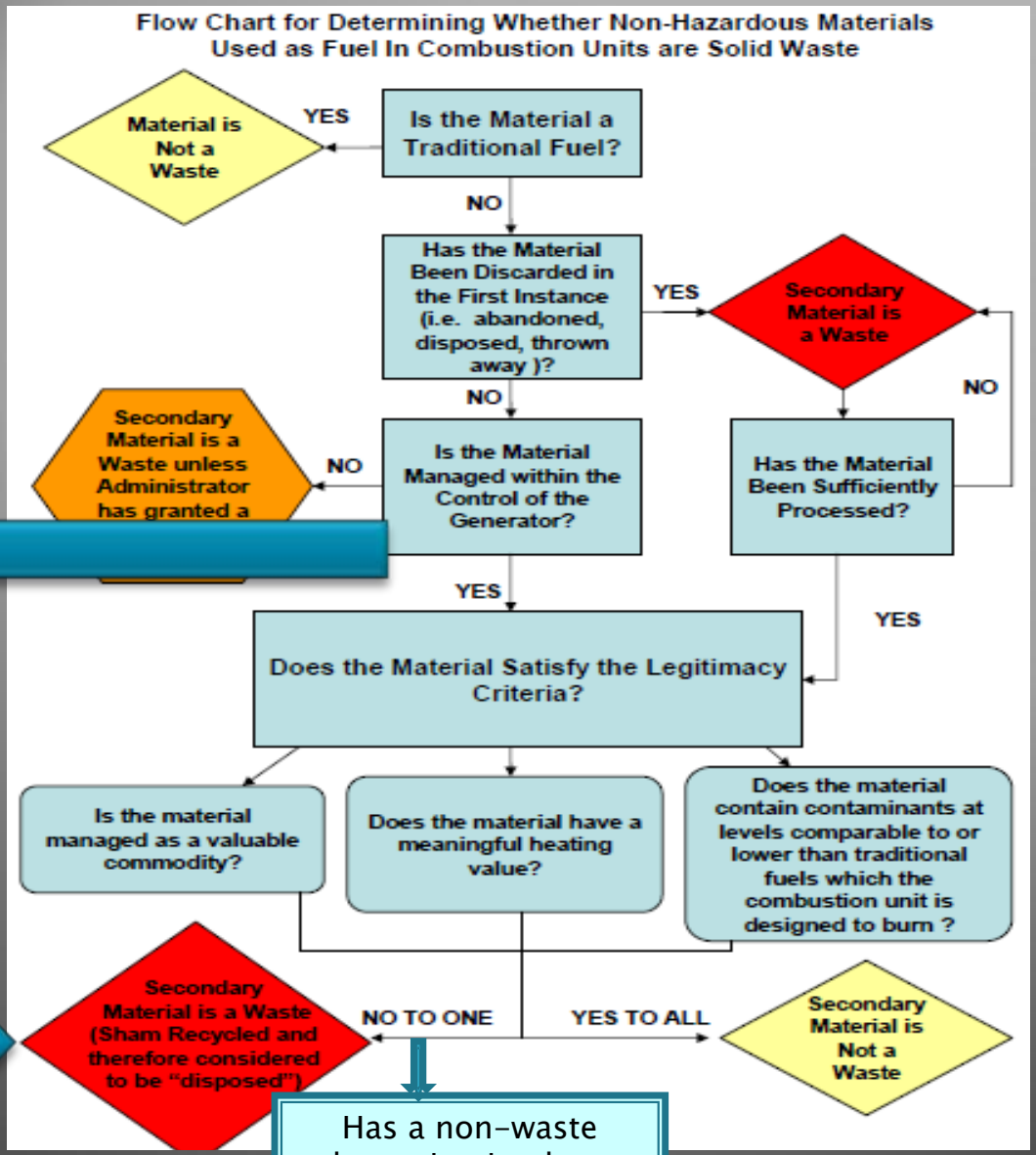
Changes Proposed to NHSM Rule

- EPA added a petition process for an owner or operator of a facility to petition EPA for a determination based on balancing of the legitimacy criteria and other relevant factors
  - Can allow a material to be non-waste if it doesn't quite meet all legitimacy criteria or doesn't fully meet them.
  - Petition process can be used on voluntary basis for sites who need certainty over material classifications
- EPA sought comment on petition process details, including public notice timeframe.
  - There is little information on how such a petition process will work and whether it will be timely and effective.

Changes Proposed to NHSM Rule

- EPA proposes to list two materials as non-waste:
  - Scrap Tires that are not discarded and are managed in established tire collection programs, including tires removed from vehicles and off-spec tires.
  - Resinated Wood
- EPA sought additional data for some materials in order to consider adding them to listed non-wastes:
  - Pulp and Paper Wastewater Treatment Residuals
  - Coal Refuse from legacy piles

Solid Waste Definition Proposed Rule Fuel Flowchart



Is the material Scrap Tires managed under established tire collection system or resinated wood used in combustion unit or has the material been granted a non-waste determination?

No

No

Yes

Has a non-waste determination been granted?

Yes

Material is not a Waste

Remaining Issues DSW

- Materials that have never been discarded should not be a waste in the first instance.
- The petition process must be timely and should not be overly burdensome for sites to prepare for compliance.
  - Limited time for compliance – need <6 month determination process
  - Must comply with B. MACT/Area Source MACT or change combustion materials in 3 years total time.
- EPA should grant categorical exclusions for more non-waste materials

QUESTIONS?

Example – Pulp & Paper Sludge
(primary cellulosic fiber and secondary sludge)

- Not a Traditional Fuel
  - In 2004, 22% of pulp & paper sludges were used as fuels
  - But in 2002, 52% of pulp and paper sludges were landfilled
  - EPA concludes that this material is not a traditional fuel.
- Waste or Non-Waste?
  - If the specific material is managed under the control of the generator and meets all three of the legitimacy criteria:
    - Managed as a valuable commodity
    - Material has a meaningful heating value
    - Material must contain contaminants at levels comparable to or lower than the traditional fuel which the combustion unit is designed to burn.

Example – Pulp & Paper Sludge

(primary cellulosic fiber and secondary sludge)

Managed as a valuable commodity – FACTORS listed in RULE:

- The storage of the non-hazardous secondary material prior to use must not exceed reasonable time frames;
- Where there is an analogous fuel, the non-hazardous secondary material must be managed in a manner consistent with the analogous fuel or otherwise be adequately contained to prevent releases to the environment;
- If there is no analogous fuel, the non-hazardous secondary material must be adequately contained so as to prevent releases to the environment;

Example in Preamble for Pulp & Paper Sludge in general:

- *Since sludges are handled promptly (ie. not stored for long periods of time and are contained in storage units along with traditional fuels (e.g. wood and bark) with minimal loss (similar to a valuable commodity), EPA concludes that these materials are in general managed as a valuable commodity. (see FR15489)*

Example – Pulp & Paper Sludge

(primary cellulosic fiber and secondary sludge)

Material has a meaningful heating value

Meaningful heat value:

- Meaningful heat value presumed for materials with energy value >5,000 Btu/lb
- Materials <5,000 Btu/lb energy value can demonstrate energy can be recovered cost effectively
  - ***Thus, the 5,000 Btu/lb limit is a general guideline, which is being adopted in this final rule,*** but allows some flexibility. To allow such flexibility for facilities with energy recovery units that use non-hazardous secondary materials as fuels with an energy content lower than 5,000 Btu/lb, as fired, ***a person may demonstrate (see Section VII.I Determining That Non- Hazardous Secondary Material Meets the Legitimacy Criteria) that a meaningful heating value is derived from the non-hazardous secondary material if the energy recovery unit can cost effectively recover meaningful energy from the non-hazardous secondary materials used as fuels. Factors that may be appropriate in determining whether an energy recovery unit can cost effectively recover energy from the non-hazardous secondary material include, but are not limited to, whether the facility encounters a cost savings due to not having to purchase significant amounts of traditional fuels they otherwise would need, whether they are purchasing the non-hazardous secondary material to use as a fuel, whether the non-hazardous secondary material they are burning can self-sustain combustion, and whether their operation produces energy that is sold for a profit (e.g., a utility boiler that is dedicated to burning a specific type of non-hazardous secondary material that is below 5,000 Btu/lb could show that their operation produces electricity that is sold for a profit).***

Example in Preamble for Pulp & Paper Sludge in general:

- *EPA noted that comments showed that pulp and paper sludges have a heating value between 3300 – 9500 BTU/lb on a dry basis but that they had no information on the BTU/lb value as fired. (15488)*
- *"While pulp and paper sludges can have a heating value below 5000 btu/lb, even on a dry basis, pulp and paper mills do try to improve the heating value through dewatering, thus we believe that pulp and paper sludges generally meet the meaningful heating value legitimacy criterion."*

Example – Pulp & Paper Sludge

(primary cellulosic fiber and secondary sludge)

Material must contain contaminants at levels comparable to or lower than the traditional fuel which the combustion unit is designed to burn

1. What traditional fuel is the combustion unit designed to burn?
   - Clean wood was the comparison fuel used in EPA's assessment

   "while some commenters compared contaminant levels to those in coal, we found it appropriate to compare contaminant concentrations to untreated wood since wood is also burned in pulp and paper mills."
2. What levels of contaminants are in the traditional fuel?
3. What levels of contaminants are in the pulp and paper sludge?
   - See Material Characterization Paper and data in preamble.

Some Comparisons from final rule preamble:

- Chlorine content in sludge varies an average of 318 ppm, maximum mill average of 2399 ppm and a maximum sample value of 4800 ppm. One value as high as 16550 noted and presumed unrepresentative. (see FR 15488-9), Little data discussed on Chloride content in wood in preamble, but noted that untreated wood levels are as high as 11,890 ppm.
- Coal comparison: If sludge with 16550 ppm Cl were burned in coal-fired boiler, it would not pass test and would be a waste. (USGS data says coal average Cl is 614 ppm, with maximum of 8800 ppm. Other data said the highest value was 7400 but typical bituminous coal averaged 1200 ppm.)

Example – Pulp & Paper Sludge

(primary cellulosic fiber and secondary sludge)

Material must contain contaminants at levels comparable to or lower than the traditional fuel which the combustion unit is designed to burn

Metals

- As, Cr, Hg, Pg levels in sludge were below detects <1 to 22 ppm
- Untreated wood has levels of As, Cr, Hg, and Pb as high as 6.8. 130 ppm, 2 ppm and 340 ppm
- Coal has levels of As, Cr, Hg and Pb as high as 80 ppm, 121.4 ppm, 2 ppm and 80 ppm.
- Levels of As, Cr, Hg and Pb from data submitted for pulp and paper sludges were lower than for untreated wood and coal.

MEK

- "We did receive some elevated levels of MEK on 5 samples (6 to 45 ppm), but we do not believe that this data change the view that these sludges generally meet the legitimacy criterion, especially since EPA removed MEK from the CAA 112 HAP list in 2005 and thus MEK is no longer considered a "contaminant" in evaluating the contaminant legitimacy criteria"

Waste/non-waste Documentation of Self Determination is Critical for ongoing Compliance and is Required

- ***Documentation & Recordkeeping for Self Determinations:***
  - *The CAA section 112 rule requires notifications and recordkeeping, including documentation as to how the non-hazardous secondary material meets the legitimacy criteria, and satisfies the definition of processing and/or the requirements for the petition process. (§§40 CFR 63.7530 and 63.7555). Specific recordkeeping requirements for area source boilers combusting non-hazardous secondary materials are found at 40 CFR 63.11225(c)(2)(ii) under the CAA section 112 rule for area source boilers. Additionally, regulations at 40 CFR 60.2175(v) promulgated for commercial and industrial solid waste incinerators under CAA section 129 require basic recordkeeping to establish whether materials combusted in a commercial or industrial unit meet the standards and procedures for identification of non-hazardous secondary materials that are not solid wastes. Owners or operators of commercial or industrial facilities that combust materials that are not traditional fuels are directed to the CAA section 112 regulations for boilers and process heaters, and the CAA section 129 regulations for commercial and industrial incinerators, to determine the recordkeeping provisions related to the definition of solid waste that may apply to them.*
- ***See Area Source Rule and CISWI Rule provisions cited.***