

Workshop for Proposed Solar Panel Regulations



Regulatory Exemption and Universal Waste Management Options for End-of-Life Hazardous Waste Solar Panels

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A large field of solar panels is shown, stretching into the distance under a cloudy sky. The panels are arranged in neat rows and are tilted towards the sun. In the background, there are utility poles and power lines. The foreground shows a grassy field. The overall scene is a typical solar farm.

**An introduction of who we are
and why we are here today ...**

What are Our Objectives Today?

Discuss what types of solar panels are addressed in the draft regulations

Discuss management options presented in the draft regulations

Provide time for participant comments on regulatory concepts

Present regulation development process

Timeline/format for providing input to DTSC

Agenda for Today's Workshop

Background

Formal Rulemaking Process

Overview of Regulatory Concepts

Break

Format of Comments Requested

Wrap-up

DTSC Draft Solar Panel Regulations

- **This is your opportunity to interact with DTSC and provide input on what is or what should be required to properly and safely manage HW solar panels.**
- **This is the time to refine those areas of the regulations that DTSC is proposing prior to the formal adoption process.**
- **This is the time to let us know what is working in the industry and in any existing take-back programs.**

DTSC Draft Solar Panel Regulations

DTSC Formal Rulemaking Process

- Pre-Public Notice Development
- Initial Rulemaking Package
- 45-Day Public Notice and Comment Period
(+ CEQA comment period)
- Public Hearing (end of 45-Day Notice Period)
- Post-Hearing Review
- Final Rulemaking Package
- OAL Review

DTSC Draft Solar Panel Regulations

FORMAL RULEMAKING TIMELINE

<u>ACTIVITIES</u>	<u>APPROXIMATE DATE</u>
■ Prepare Package	Feb to September 2010
■ Public Workshop	July 28, 2010 (HQ)
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■ Effective Date	April or May 2011

How did we get here?



Research and Outreach Efforts by DTSC

■ Research

- PV Cycle, NREL, Brookhaven (life cycle), CA Energy Commission, SVTC White Paper, PV conference and meeting notes/presentations
- Recycling technologies (experiments vs feasible)

■ Outreach

- Manufacturers, solar panel recyclers, 3rd party management, PV Cycle, CA utilities, CA Product Stewardship, Solar Farm Operators

Research and Outreach Efforts by DTSC

■ Findings Made for Regulatory Options

- Solar panel industry is moving towards more take-back models to recycle panels to recover constituents (PV Cycle model in Europe)
- Encouraging the recycling of solar panels and recovery of hazardous constituents is a positive outcome
- Any regulatory “relief” would need to be consistent with existing DTSC statutory authority (i.e., no statutory authority to regulate solar panel products or implement EPR for HW solar panels)
- Current waste volumes are low, but volumes will increase significantly over the next 5 to 10 years (e.g., new technology development, change out of large arrays, construction of new recycling facilities in U.S.)

Management of Hazardous Waste Solar Panels

- **Current standards: fully regulated hazardous waste**
 - Manifests, generator standards, registered HW transporter, fees
- **Hazardous Waste Conditional Exemption Option (proposed 66261.6)**
 - If managed as part of a reclamation (recycling) program administered by a solar panel vendor
 - Reduced generator/transporter requirements
- **Universal Waste Option (proposed chapter 23, article 8)**
 - Reduced management standards similar to other UW (e.g., batteries, lamps, electronic devices) and requires recycling

Management Options for HW Solar Panels



HAZARDOUS WASTE

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL.
IF FOUND, CONTACT THE NEAREST POLICE OR PUBLIC SAFETY AUTHORITY OR THE U.S. ENVIRONMENTAL PROTECTION AGENCY OR THE CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCE CONTROL.

GENERATOR INFORMATION:

NAME _____ PHONE _____
 ADDRESS _____
 CITY _____ STATE _____ ZIP _____

EPA / MANIFEST ID NO. / DOCUMENT NO. _____
 EPA WASTE NO. _____ CA. ACCUMULATION WASTE NO. _____ START DATE _____

CONTENTS COMPOSITION _____

PHYSICAL STATE SOLID LIQUID HAZARDOUS PROPERTIES FLAMMABLE TOXIC CORROSIVE REACTIVITY OTHER _____

 D.O.T. PROPER SHIPPING NAME AND UN OR NA NO. WITH PREFIX

HANDLE WITH CARE!

EMED Co., Inc. • 1-800-442-9823 081586

SHIPPING DOCUMENT

Destination(City-Town) Name: _____ Address: _____		Consignor Name: _____ Address: _____	
Name of carrier _____	Prepaid <input type="checkbox"/> Collect <input type="checkbox"/>	Transport unit no. _____	
Point of origin _____	Shipping date _____	Shipper's no. _____	
REGULATED DANGEROUS GOODS		24 HOUR NUMBER : _____ ERP reference & telephone number : _____	
Shipping name (technical name) if applicable	Class primary	Class subsidiary	UN number
			Packing group
			Quantity
			Packages requiring labels
THIS IS TO CERTIFY THAT THE ABOVE NAMED ARTICLES ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED AND LABELLED AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE TRANSPORTATION OF DANGEROUS GOODS REGULATIONS			
SPECIAL INSTRUCTIONS			
NON REGULATED GOODS			
Packages	Description of articles	Weight	
Received in apparent good order _____		Consignee's signature _____	
		Shipper's signature _____	
Received above in apparent good order _____		Driver's signature _____	
		Drivers' no. _____	

UNIVERSAL WASTE

CONTENTS _____

ACCUMULATION START DATE _____

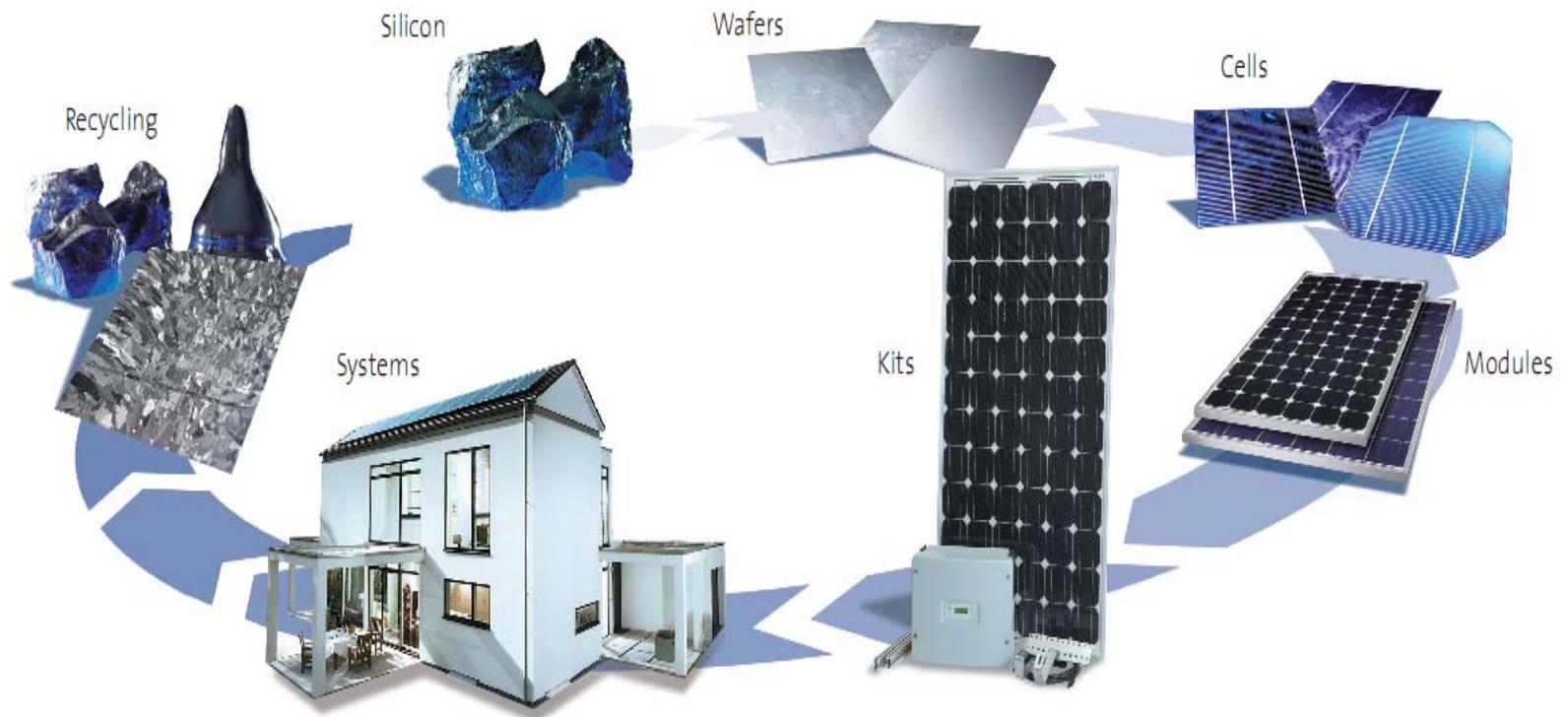
SHIPPER _____

ADDRESS _____

CITY, STATE, ZIP _____

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We want to promote the recycling of hazardous waste solar panels



Waste Solar Panels can be Recovered

**Materials reclaimed: silicon, glass,
aluminum, tin/copper, semiconductor
material**



Hazardous Waste Conditional Exemption Option

- **Chapter 11, §66261.6 (a)(3)(D) and (a)(8)**
 - Part of reclamation program administered by solar panel vendor
 - Reclamation facilities in U.S. and its territories
 - Recycled at a designated facility (if in CA, requires a permit or other grant of authorization)
 - Non-RCRA hazardous waste only

- **Solar Panel Definition**
 - PV module, PV panel or other PV device
 - Does not include physically damaged, deteriorated, or altered solar panel that is no longer recognizable as intact or broken panel, or a solar powered electronic device

- **Solar Panel Vendor Definition**
 - Solar panel manufacturer, producer, marketer, or distributor
 - U.S. location
 - Administers a solar panel reclamation program and accepts for reclamation solar panels per §66261.6 exemption

Hazardous Waste Conditional Exemption Option

■ Pre-transport requirements

- Part of reclamation program administered by solar panel vendor
- Prevent releases under reasonably foreseeable conditions
- Only applies to intact solar panels
- Leaking/damaged and potential to cause release are managed per article 8 of chapter 23 (UW management standards)
- Labeling
- Immediately clean up spills

Hazardous Waste Conditional Exemption Option

■ Transport requirements

- Transport per article 5 of chapter 23 (UW transporter standards)
- No disposal, DOT compliance, UW transfer facility limits, response to releases, export per chapter 12 (HW standards)
- If DOT haz material=proper shipping paper description
- Only transport to reclamation facility within U.S. designated by solar panel vendor (administrator of reclamation program)

■ Export requirements

- Prohibition on export, unless per chapter 12 (HW export)

Universal Waste Option

- **New UW category for solar panels (Chapter 23)**
 - Same definition of solar panels
 - RCRA and non-RCRA HW included
 - Universal waste handler of solar panels
 - Separate article in this draft (article 8 of Chapter 23) for clarity (possible inclusion within existing chapter 23 structure in final draft)
 - No solar panel vendor reclamation program component
 - Prohibition on disposal under UW standards, recycling only
 - Allows flexibility in collection/transport

Which solar panels are UW?

66273.7.1 Applicability

- Not covered under chapter 23: not yet wastes, does not exhibit characteristic of HW, destined for disposal, HW management, §66261.6 HW conditional exemption

Waste generation conditions

Used: when discarded OR when physically cracked, broken, or shattered or otherwise removed from service without intent to re-install

Unused: if not a retrograde material, becomes waste on date of discard.

If retrograde material, becomes waste on date it become recyclable material (as defined in §66260.10/one year)

UW Exemptions not Applicable

66273.8 (c)

What does not apply to solar panels?

Household and conditionally exempt small quantity universal waste generator exemptions do not apply to solar panels managed per proposed article 8 standards

Why?

Limits management under UW option to universal waste handlers of solar panels, which might include trained and qualified solar panel installers, repair persons, and others who are specifically trained to remove, package and transport solar panels

Prohibitions

66273.81

- Prohibited from disposal
- Prohibited from dilution or treatment
- Prohibited from export unless per UW export requirements, or applicable HW export requirements in chapter 12

Notification

66273.82

Which notification of solar panel management activities is applicable?

To U.S. EPA — before accumulating 5,000 kg UW (that are RCRA UW) notify U.S. EPA of UW activities

To DTSC — any UW handler of solar panels who accumulates 5,000 kg of solar panels that are not RCRA HW, and who has not already notified U.S. EPA (currently, this is the most likely scenario)

ID Numbers

66273.82(a) and (b)

What type of an ID number?

U.S. EPA — before accumulating 5,000 kg UW (that are RCRA UW); included as part of U.S. EPA notification process

CA (State) — if the UW handler was not required to notify U.S. EPA because the accumulated 5,000 kg of UWs are all non-RCRA hazardous waste (currently, the most likely scenario)

Waste Management Requirements for Solar Panels



66273.83

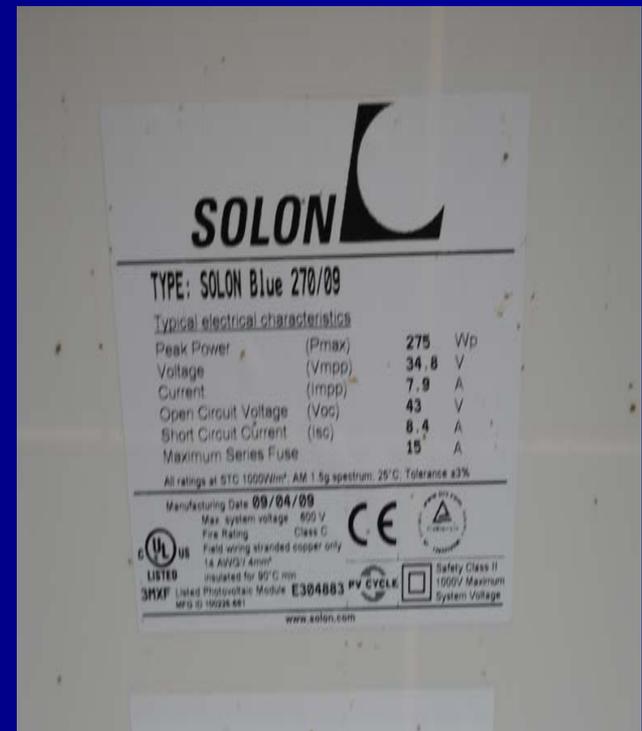
- Containerization and Packaging (performance-based standards)
- Manage in a manner to prevent breakage
- Intact solar panels can be packaged on pallets with stretch-film, as long as prevent breakage standards maintained
- Immediate cleanup and containerize broken solar panels that could cause release
- Packing materials if necessary
- If release is HW, managed per chapter 12 (generator standards)
- If broken and damaged solar panel still meets definition, UW standards can be applied

Labeling/Marking

66273.84

Clearly label as “Universal Waste—Solar Panel(s)”

- Accumulation in designated areas demarcated as above is allowed (e.g., solar panels on pallets)



Personnel Training



66273.85

- Similar to current UW handler requirements
- Proper solar panel management and emergency response
- Initial and annual training
- Written material
- Hazards, proper disposition, response to releases, applicable UW solar panels requirements
- Maintain written training records by date
- Keep records for 3 years from date person last managed solar panels

Accumulation Time

66273.86

- Up to one year from the date of generation or received
- Accumulation date demonstration options
 - Label container
 - Label individual solar panel
 - Maintain inventory system (individual/groups)
 - Label accumulation area
 - Any other method that meets performance standard

Offsite Shipments

66273.87

- Restricts where solar panels can be taken
- If self-transport, UW transporter requirements apply
- Comply with applicable DOT standards for hazardous materials
- Prior agreement between parties to accept
- If rejected, original shipper determines where to send (return/other destination facility)
- Same for handler that rejects
- Immediately notify DTSC if receive HW in shipment
- If receive non-HW, manage appropriately

Tracking Solar Panel Shipments

66273.88

- **Keep records of each shipment received**
- **Keep records of each shipment sent**
- **Records may include: log, invoice, manifest, bill of lading, or other shipping document**
- **Records shall include certain shipping-related information**
- **Retain each type of record for at least 3 years from date of receipt/shipment**

UW Export Requirements

66273.40

Exports of any UW solar panels are subject to the export requirements of Title 22, Chapter 12 (HW export requirements)

- **Time frames: require sixty (60) days notice for RCRA HW exports, and four (4) weeks for non-RCRA HW exports (currently, most likely scenario)**

Input Received from Stakeholders

Protection of environment and health and safety are primary priorities

Prefer regulatory exemption options to streamline collection and transport

Recycling mandatory as condition of any exemption

Prefer options that allow 3rd parties to collect and transport (support existing take-back programs and manufacturer-funded)

Packaging and transport requirements to manage risk

Question Topics for Participants

See separate document for complete text of questions

1. Treatment
2. Integration into existing chapter 23 standards, not as a separate article
3. Support existing take-back programs/3rd party
4. Adequacy of transportation requirements
5. HH and CESQUWG exemptions/limited to trained solar panel handlers
6. Annual reports, if so by whom
7. Definition clarity, are more needed
8. Notification by solar panel vendors
9. Other



Break

15 Minutes

DTSC Draft Solar Panel Regulations



DTSC Draft Solar Panel Regulations

Please format your comments to:

- Provide the specific section number(s) from the draft text language
- Provide the specific language for which you have a comment
- Be specific to the content of your comment
- Provide suggested language changes, preferably in underline and ~~strikeout~~ formats
- Include examples and supporting documentation, especially in your response to Questions to Participants

DTSC Draft Solar Panel Regulations

- Additional Feedback
- DTSC requests your written comments on this workshop to be submitted no later than **August 11, 2010.**

Written comments may be submitted to:

Mailed: DTSC
P.O. Box 806
Sacramento, California 95812-0806
Attn: Ellen L. Haertle, MS-22A

Email: ehaertle@dtsc.ca.gov

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What's next?

- Updated Web site information:
http://www.dtsc.ca.gov/LawsRegsPolicies/Solar_Panels.cfm
- Questions to ehaertle@dtsc.ca.gov

