

Recycling Gypsum Wallboard

NEWMOA / NERC States



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U.S. Gypsum Supply 2021

Domestic supply down imports up

Source USGS

Source (metric tons)	2020	2021	%
Mined	21,200,000	22,400,000	+6%
Imported	6,030,000	6,520,000	+8%
Synthetic (FGD)	14,400,000	13,000,000	-10%
Total Supply	41,600,000	41,900,000	+0.8%

Recycled Gypsum Market Drivers



- ▶ Coal Fired Energy Production
- ▶ Transportation to Market
- ▶ Waste Disposal Cost & Regulation



U.S. Generates 13.5 Million
Tons of New & Demo Drywall
Scraps

(source CDRA 2014)

Gypsum Drywall sold New England and Mid Atlantic

3.23 million ton (USGS) - PA = 2.58 ? Million ton estimated

**15% waste =
387,000 ton**



**Demolition?
(Deconstruction)
No reliable data**



NEWMOA States Estimated Board Sales & Scrap Generated

- ▶ Recycled 1.3% ?
2022 YTD 11/30



State	Population	Population %	Tons board	15% scrap
Ct	3,565,000	8%	204,518	30,678
MA	7,126,000	16%	408,806	61,321
ME	1,372,000	3%	78,709	11,806
NH	1,390,000	3%	79,742	11,961
NJ	9,388,000	21%	538,573	80,786
NY	20,366,000	45%	1,168,362	175,254
RI	1,106,000	2%	63,449	9,517
VT	647,000	1%	37,117	5,568
Total	44,960,000	100%	2,579,276.00	386,891

NEWMOA 2010 estimate for Northeast 720,000

Drywall Scrap Outlets Since 2010

- ▶ Gypsum Recycling America
2006-2010
- ▶ USA Gypsum since 1998 Serving
NEWMOA states since 2010
- ▶ Washington State population 7.9
million gypsum recovered 54,980
tons 2018 (*State of Washington*)



98.7%? Disposal Options

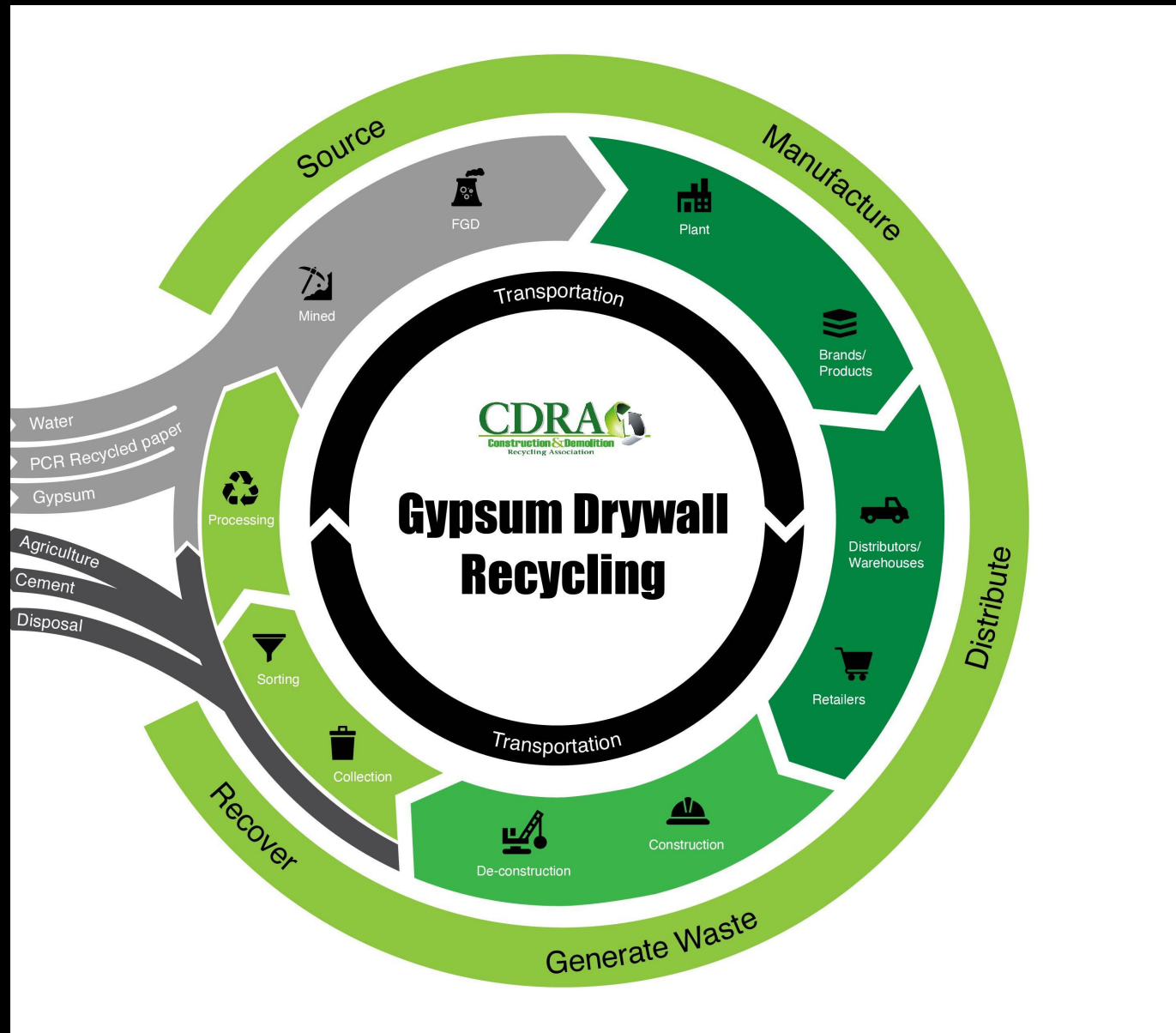


NEWMOA 2010 “Policy Options White Paper Promoting Greater Recycling of Gypsum Wallboard from Construction and Demolition (C&D) Projects in the Northeast”



- ▶ Ban disposal
- ▶ Require recycling in state financed projects
- ▶ Require waste management planning
- ▶ Common terminology & reporting
- ▶ Implement extended producer responsibility

Reinventing the wheel?



THE BEST MANAGEMENT PRACTICES FOR THE RECYCLING OF GYPSUM WASTE FROM DECONSTRUCTION TO MANUFACTURING

January 3, 2023

Prepared for:
The Construction and Demolition Recycling Association (CDRA)
Gypsum Recycling Committee

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BMP for Recycling Gypsum Waste

CDRA Gypsum Recycling Committee
releases comprehensive guideline

New Board Type and Volume Sold



Regular	Type X	Other	Total
15,500	8,130	3,670	27,300

Source USGS 2021 - Per thousand Sq.ft.

Other = 13.44%

Specialty Board Recycling Challenges

- Anti microbial ingredients
- Fiberglass facing and mesh



Demolition Gypsum Drywall *Deconstruction Methods Required*

► Concerns

- Asbestos in joint compounds
- Lead based paints
- Contamination
- Market / Regulatory

Mixed C&D Processing & Transfer

- ▶ Drywall gets crushed & cannot be picked on sort belts
- ▶ Requires Positive Sort before processing
- ▶ Need space & labor
- ▶ Safety Issues



Source Separation to Transfer Options





U.S. Gypsum Market *mmt*

Cement	4.4
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Agriculture & Misc.	15.5
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New Drywall	22.8
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Supply is adequate but unevenly distributed. (USGS 2021)

Processing for Closed Loop

- ▶ Considerations
 - ▶ Paper Content
 - ▶ Particle size
 - ▶ Specialty board
 - ▶ Analytical data
 - ▶ Demo material generally not accepted



Agricultural & Misc. Markets

► Considerations

► Particle size

► Moisture

► Analytic data

► Regulatory

► License

► Seasonal



Cement & Masonry

- ▶ Considerations
 - ▶ Paper content
 - ▶ Particle size
 - ▶ Moisture
 - ▶ Analytics





Paper Facing

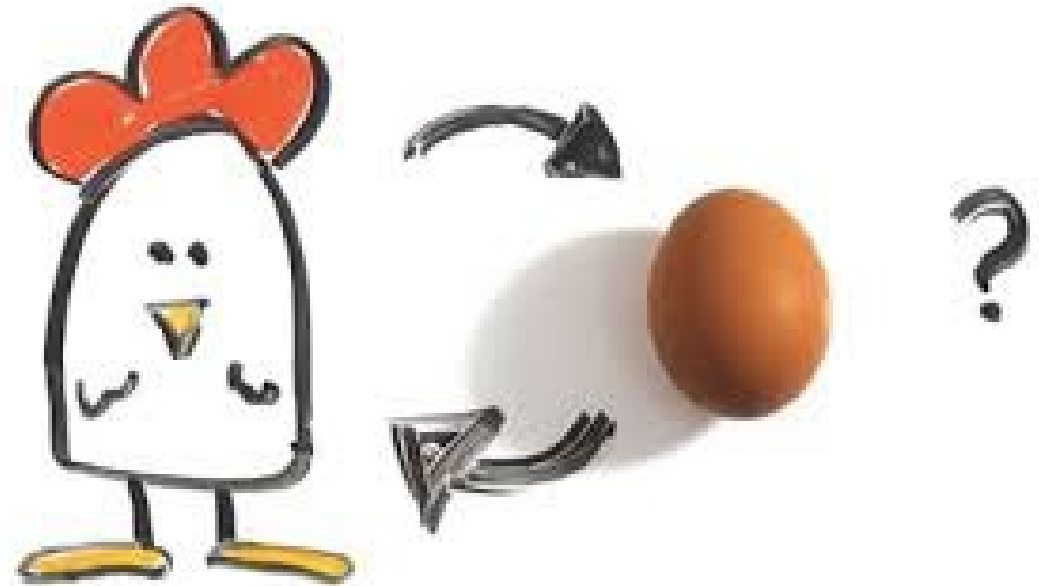
Gypsum & Starch Residual

- ▶ Markets
 - ▶ Bedding
 - ▶ Composting
 - ▶ Solidification
 - ▶ Ceiling tile
 - ▶ Cellulose insulation
- ▶ Considerations
 - ▶ Contamination
 - ▶ Specialty board facing
 - ▶ Demo board paint
 - ▶ Particle sizing

Market Challenges

Recycling Volume vs Market requirements

- ▶ Steady volume
- ▶ Consistent material
- ▶ Drywall manufacturers typical 500k ton
- ▶ Cement plants typical 45k ton
- ▶ Agriculture small but seasonal



The Next Decade?

“The years just **pass like trains**, I wave but they don't slow down”

....*Steve Wilson*

