



Resolution of Dioxin Issue in City of Midland

March 1, 2012

What Are Dioxins?

A family of similar chemicals, including:

- 75 dioxins (7 considered toxic)
- 135 related furans (10 considered toxic)

Predominantly formed from:

- Industrial processes, unintended by-products
- Burning wastes and other substances

Why Are Dioxins in Midland Area Soils?

- Primarily from past burning of wastes at Dow
- Dioxins were released into the air and deposited on soils downwind from the plant
- Note: Emissions from Dow Michigan Operations incinerators no longer release elevated levels of dioxins (99.999% removal)

DEQ's Role and Involvement

The DEQ oversees activities that achieve compliance with numerous state and federal environmental laws in Michigan, including:

- Licensing of hazardous waste management facilities (under Part 111 of Act 451 and RCRA); and
- Requiring facilities to conduct corrective action

What is Corrective Action?

- Companies must cleanup contamination they released, on-site and off-site
- Phased process to investigate and cleanup historic, current, and future releases of contaminants

Midland Area Soils History

1983-1988

Sampling of dioxin levels in Midland concluded soils are below federal residential cleanup guidance of 1000 parts per trillion (ppt)



1988

EPA report recommended additional sampling of soil, sediment and water

Federal hazardous waste permit included requirements for sampling plans

Regulatory History (Cont'd.)

1995

DEQ established generic state soil cleanup level of 90 ppt for dioxin

1996

EPA authorized Michigan to oversee corrective action at hazardous waste facilities

1996-1998

Sampling of dioxin levels in Midland soils (DEQ/1996, Dow/1998) showed soils were above the state soil cleanup level of 90 ppt

Regulatory History (Cont'd.)

2002

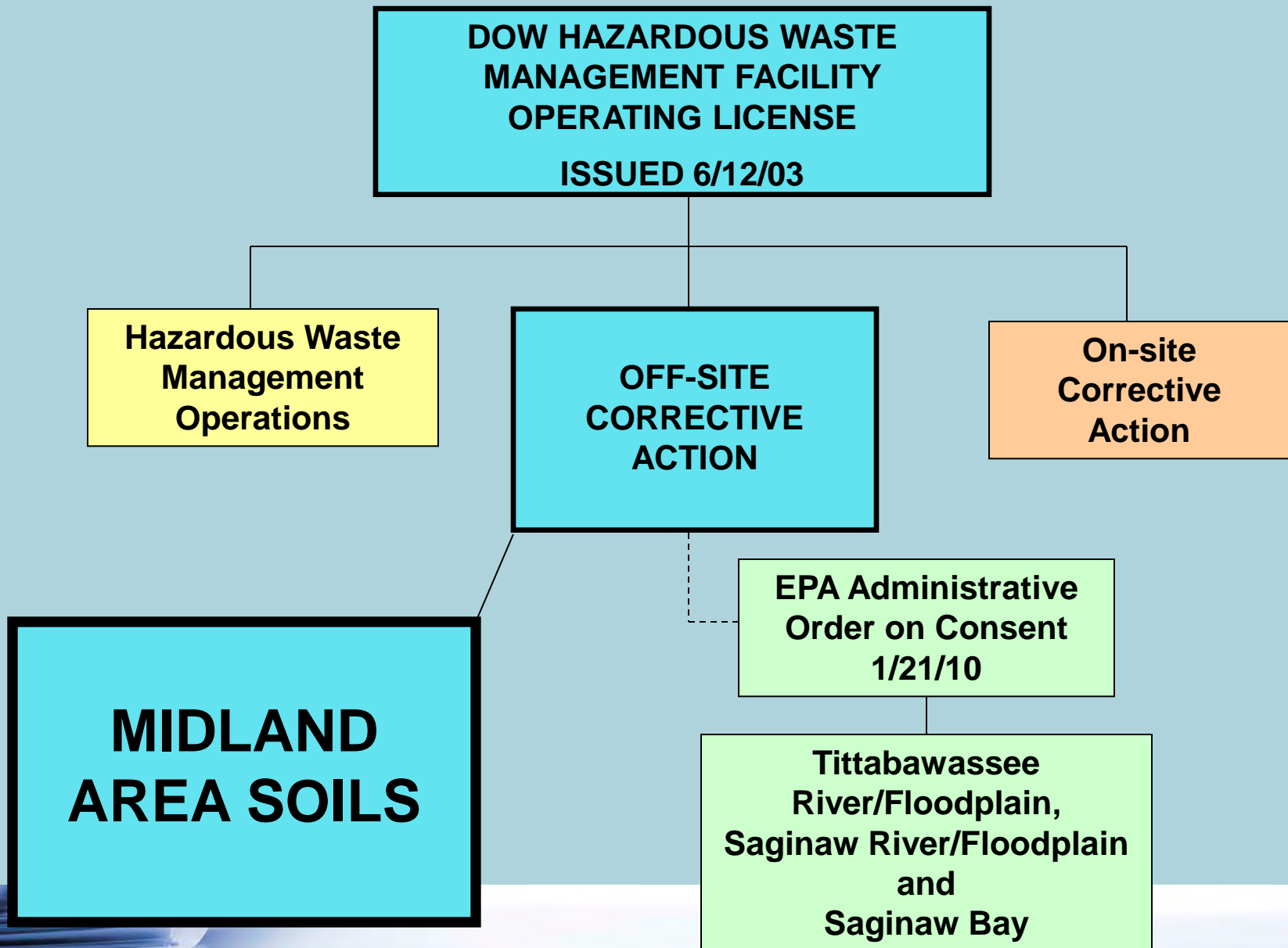
90 ppt state generic residential soil dioxin cleanup level was incorporated into regulations

2003

Hazardous Waste Management Facility Operating License issued by DEQ

License required Dow to conduct corrective action for:

- Midland area soils
- Dow plant site
- Tittabawassee/Saginaw Rivers and floodplains and Saginaw Bay



Regulatory History (Cont'd.)

2004

Dow proposed development of site-specific cleanup level for Midland, which included:

- Bioavailability studies
- Soil testing

2005

Interim response activities conducted at properties in residential use north and east of Dow plant site

- Interior house cleaning (carpets, hard surfaces, ducts)
- Placement of interim cover materials in yards
- Replacement of garden soil with clean soil

Regulatory History (Cont'd.)

2006-2011

Additional studies conducted to evaluate Midland-specific dioxin and soil characteristics

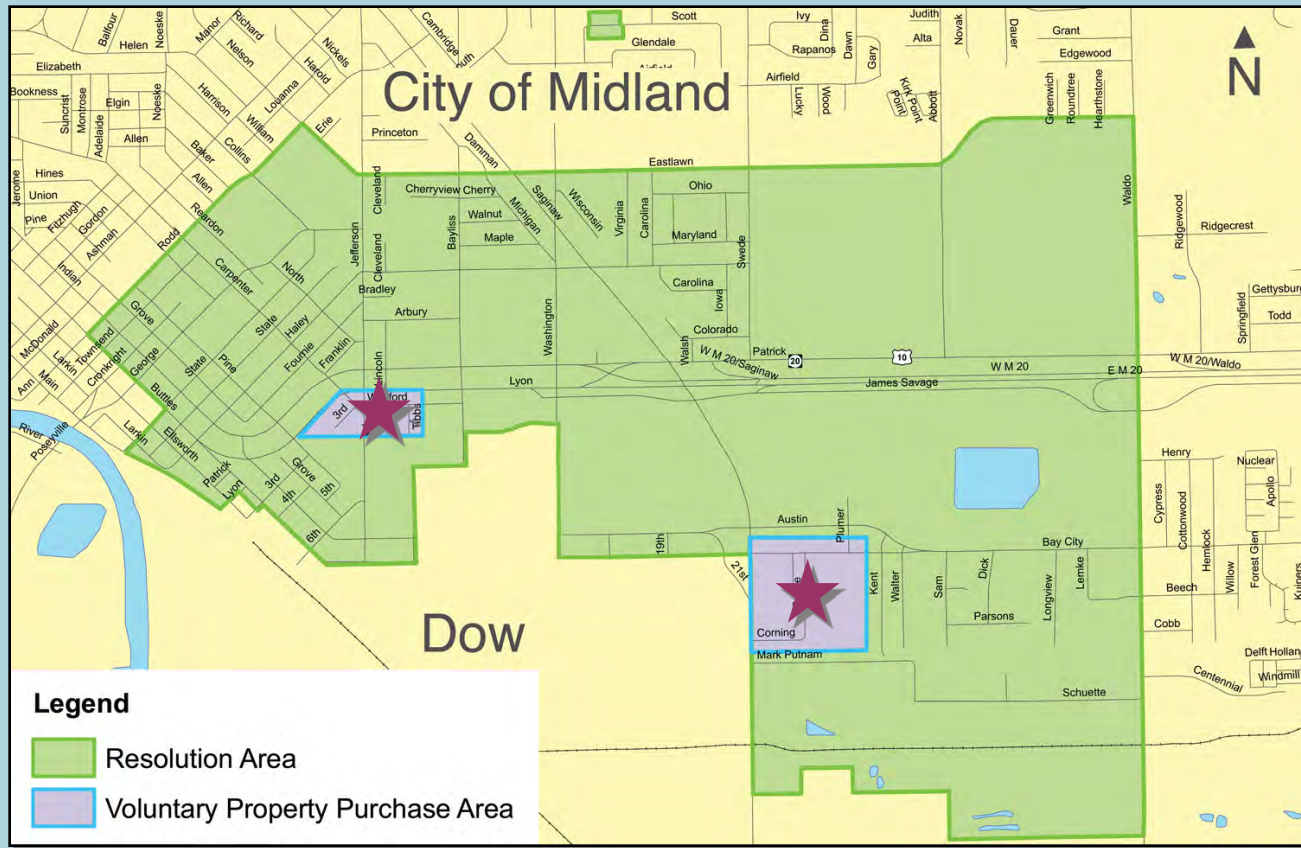
- Serves as the basis for the initial Resolution Area



Legend

- City of Midland
- Dow Midland Plant
- Access Granted; samples collected
- Access denied; no samples taken

Initial Boundary of Midland Soils Resolution Area



★ Denotes Dow Property Purchase Program Areas

Current Status

2012

Dow and the DEQ reach conceptual agreement on a proposed plan to resolve dioxin contamination issues in city of Midland soils

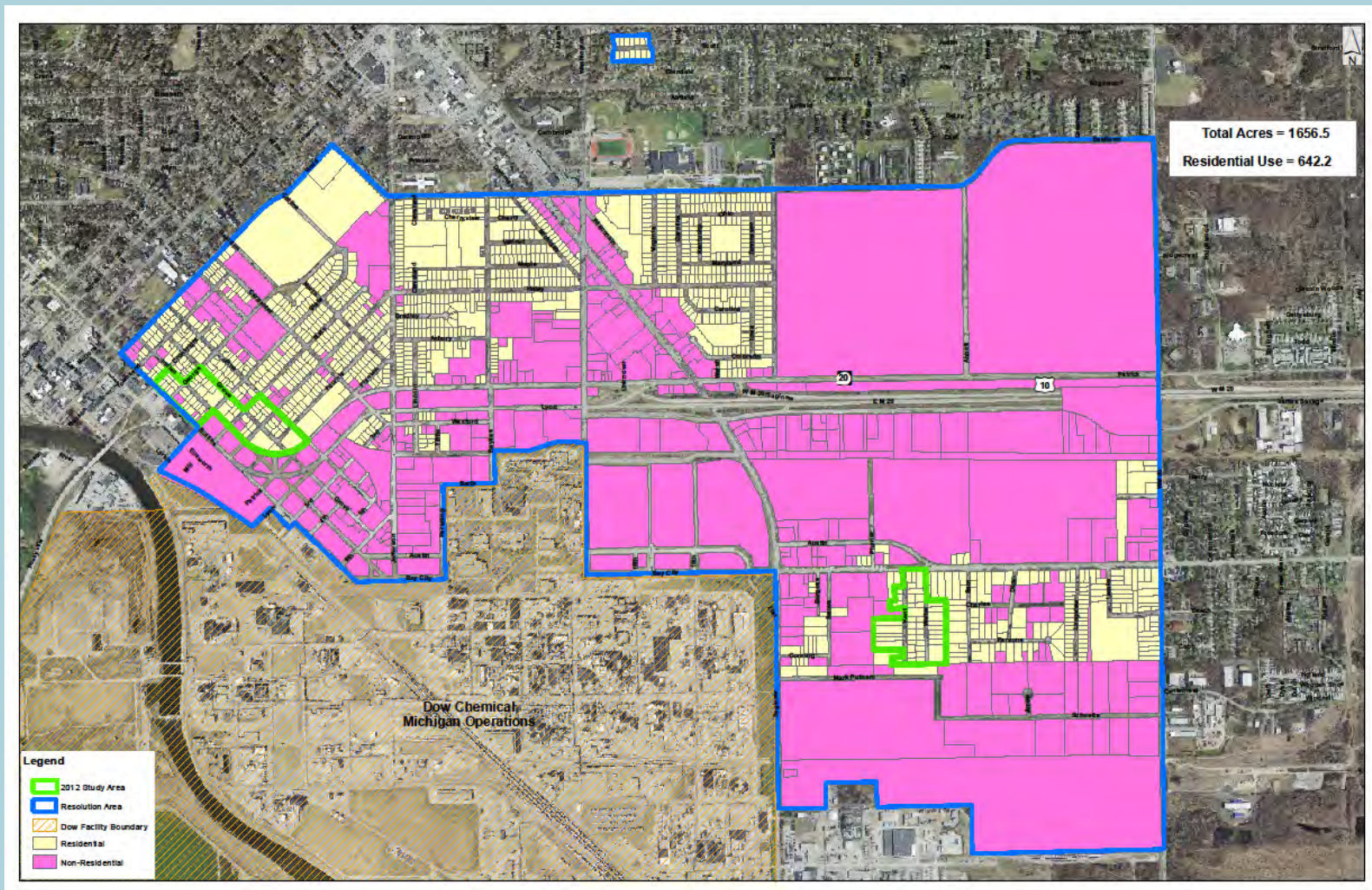
Midland site-specific dioxin action level of 250 ppt is proposed in accordance with EPA-approved risk assessment procedures

- Uses Midland area specific data
- Protective of human health

Proposed Plan

- Composite sampling method
- Properties that test above action level will be offered cleanup
- Properties that test less than or equal to the action level and those that have had cleanup will not be considered contaminated under Michigan law.
- All work done only with the expressed consent of the property owner.

Current Resolution Area



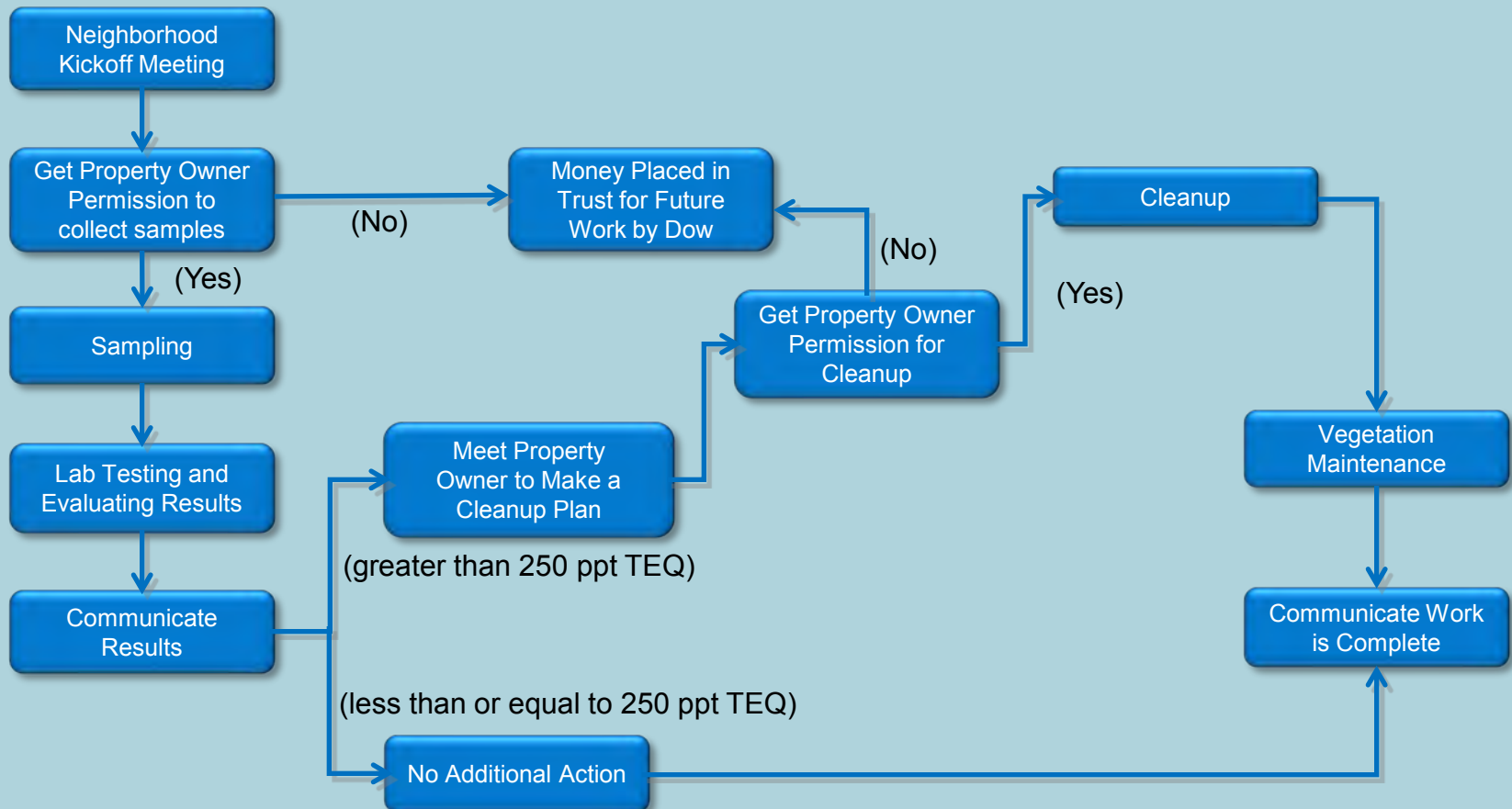


Collect 3 Samples



> 250 ppt = Offer Cleanup
≤ 250 ppt = No additional
action required

Steps Involved in Cleanup



Next Steps

Early March

Dow submits Midland Area Soils Work Plan

DEQ begins a formal 45-day public comment period on the Work Plan

Mid-March/April

Public availability sessions to be held before and after the DEQ Public Hearing:

- March 19, 11 a.m.-3 p.m.
- March 29, 4 - 8 p.m.
- Others to be scheduled

Next Steps

April

DEQ Public Hearing –
time and location TBD



Late April

Close of formal
DEQ public
comment period

Next Steps

Mid-Late April

Dow begins 2012 neighborhood meetings



May

DEQ issues decision on Work Plan and response to public comments

Next Steps

(Dependent on Approval, or Approval with Modifications, of Work Plan)

May

Dow meets with property owners to obtain property access



June

Remediation design sampling begins in Midland

Next Steps

(Dependent on Approval, or Approval with Modifications, of Work Plan)

July

2012 remedial
decisions made for
2012 properties



Late July

Dow sends letters
to property owners
with sample
results/determination
of need for cleanup

Next Steps

(Dependent on Approval, or Approval with Modifications, of Work Plan)

August

Dow begins cleanup
on properties above
250 ppt where access
is granted

Mid-October

End of cleanup work
for 2012 season



Next Steps

(Dependent on Approval, or Approval with Modifications, of Work Plan)

Early December

Dow submits Annual
Remedy Report

October-January

DEQ sends letters to
property owners
confirming completion
of work

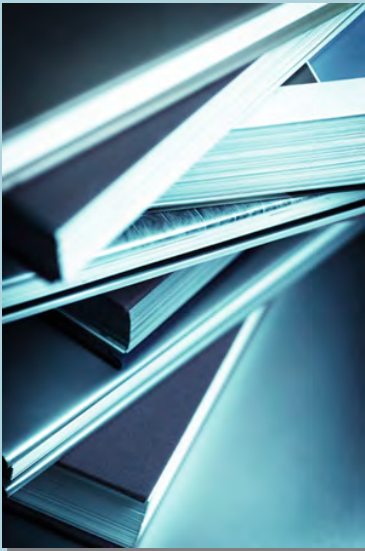


Next Steps

(Dependent on Approval, or Approval with Modifications, of Work Plan)

January

Dow submits Work Plan for 2013



2013 through 2017
(as necessary)

Dow continues work throughout remainder of Resolution Area

Summary of Proposed 2012 Process

Date	Event
May	Dow meets with property owners to obtain property access
June	Remediation design sampling begins in Midland
July	2012 remedial decisions made for 2012 properties
Late July	Dow sends letters to property owners with sample results/determination of need for cleanup
Late July/ Early August	Dow meets with property owners to obtain property access and design property-specific cleanup
August	Dow begins implementation of remediation on properties above 250 ppt where access is granted
Mid-October	End of remediation work for 2012 season
October through January	DEQ sends letters to property owners confirming completion of work

For More Information/Contacts

- www.michigan.gov/deqdioxin
- www.midlandresolution.com
- www.midlandpropertyprogram.com

- Midland Resolution Center
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