

Asbestos

Asbestos is a mineral with long, thin fibrous crystals. Its strength and unique properties made it an ideal material for insulation, fireproofing, low electrical conductivity and imperviousness to corrosion. Epidemiological studies made in the second half of the twentieth century found that asbestos exposure resulted in several life threatening diseases including asbestosis and mesothelioma. This led to the passage of several asbestos related laws, both at the federal and state level. The U.S. EPA and IDEM are responsible for the protection of the environment concerning asbestos. For information concerning OSHA and IOSHA asbestos safety regulations, contact the Safety Officer.

Construction projects may involve exposure to asbestos with either building or bridge renovation/demolition or burning. Asbestos material has been found in approximately 20% of all buildings. It is most likely to occur in buildings built between 1950 and 1975. It was used for surfacing materials, thermal system insulation and other miscellaneous uses. The presence of asbestos in INDOT bridges occurs at a much lower percentage. When it is present, it is most commonly found on utilities, gunnite, various joints, and bridge seats.

INSPECTION

Prior to demolition or renovation of INDOT owned buildings/bridges, INDOT will have an Asbestos Accredited Building Inspector do the following:

1. Investigate and sample for asbestos;
2. Estimate the amount of asbestos containing material present;
3. Identify abatement/removal measures and costs.

This information (except for removal costs) will be provided to prospective bidders during the project letting. **Trailers and small drainage structures (<20' in length) are not regulated under these rules.**

EXEMPT STRUCTURES

Certain types of constructions are exempt from the inspection requirement and the notification provisions. These include small constructions such as livestock barns, outhouses, vegetable/fruit stands, prefab sheds, smokehouses, and similar structures. These constructions are exempt if they meet **all** of the following criteria: **the construction must contain only materials such as wood, stone brick, metal and glass.** The construction **cannot** have improvements (water, sewer, electricity, insulation, etc.) and **cannot** contain any suspected asbestos containing materials.

Demolition and renovation of **single isolated** residential buildings are not regulated under the National Emission Standards for Hazardous Air Pollutants (NESHAP). Therefore, residential structures that do not share property lines and are separated by several blocks (more than two) are exempt from inspection, demolition notification, and abatement. Should you have additional questions regarding the above please contact the Environmental Services Section at 233-2050.

REGULATED ASBESTOS CONTAINING MATERIAL

Regulated asbestos containing material is defined by IDEM as meaning the following:

- (A) Friable asbestos material
- (B) Category I nonfriable asbestos containing material that has become friable
- (C) Category I nonfriable asbestos containing material that will be or has been subjected to sanding, grinding, cutting, abrading, burning, or
- (D) Category II nonfriable asbestos containing material that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations
- (E) **Regulated asbestos containing material *does not include* nonfriable asbestos containing resilient floor covering materials unless the materials are sanded, beadblasted, or mechanically pulverized so that visible asbestos emissions are discharged or the materials are burned. Resilient floor covering materials include the following:**
 - (I) sheet vinyl flooring
 - (ii) resilient tile
 - (iii) associated adhesives

NOTIFICATION

All demolition projects, regardless of the presence or not of asbestos must be reported to IDEM's Office of Air Management at least 10 working days (Monday through Friday) prior to demolition. In Marion County, the Indianapolis Air Pollution Control Division must also be contacted. Demolition is defined as the removal of buildings or bridges, or the removal of supporting beams, walls, or structures. (Redecking is not considered a demolition.)

Renovation projects, the modifying of any existing structure, require notification to IDEM's Office of Air Management **at least 10 working days prior to renovation if:**

- **≥ 260 linear feet, 160 square feet, or 35 cubic feet of regulated asbestos containing material that is to be stripped, removed, dislodged, cut, drilled or disturbed.**
- < 260 linear feet, 160 square feet, or 35 cubic feet of regulated asbestos containing material is to be stripped, removed, dislodged, cut, drilled, or disturbed, **no notification is required.**
- **Marion County only** - ≥ 25 linear feet and 15 square feet (Notify Indianapolis Air Pollution Control Division).

Notification must be done for each structure, not by parcels. Each structure requires its own notification. However, you may put up to 10 structures on one notification. House trailers are not regulated, therefore they require no notification.

Either the demolition contractor or the project engineer may legally sign the IDEM notification. (See Power of Attorney documents) INDOT is the owner while the demolition/removal contractor would be the operator. To protect INDOT, it is essential that the project engineer obtain a copy of the certified mail return receipt or verification of hand delivery of IDEM's *Notification of Demolition and Renovation Operations* prior to allowing the work to

begin (see attached copy of the Notification). The project engineer must also ensure that the work occurs on the date scheduled on the Notification, and that the required 10 days notice has been followed. If there is to be a revision in the amounts of regulated asbestos containing material or a change in the work date, then IDEM must be notified of this at least **5 working days by mail or 2 working days by fax or 2 working days by hand delivery prior to the work.** Verification of this should be required of the contractor by the project engineer. Notification to INDOT does not constitute notification to IDEM.

REMOVAL

Written notice to demolish or renovate must be provided to IDEM as per the NOTIFICATION section above. **No regulated asbestos containing material removal work or demolition activities can begin on a date other than the start date on the most recent notification.** The start date of the project is when stripping/removal of regulated asbestos containing material will take place. **Transite removal does not require removal by an asbestos contractor licensed/accredited by IDEM as long as it is removed in such a way as to not render it friable. The material, however, will need to go to a special waste landfill. Should it become friable, it then becomes regulated, requiring an asbestos contractor licensed/accredited by IDEM if the amount of regulated asbestos containing material exceeds the amount described below in an asbestos removal project.** The following work practices must be used to prevent emissions of particulate asbestos material to the outside air for **asbestos removal projects*: (326 IAC 14-10)**

1. Friable asbestos containing material shall be removed from a facility being demolished or renovated before any wrecking or dismantling takes place.
2. Friable asbestos containing material shall be adequately wetted to prevent emissions to the outside air.
3. After wetting, all asbestos containing waste material shall be sealed in leak tight packaging while wet and shall be labeled and disposed of properly.
4. For any stripped or removed friable asbestos containing materials that are left at the facility or stored elsewhere prior to disposal, store such material in a secure manner so that it cannot be vandalized or otherwise disturbed.
5. Asbestos removal projects must be implemented by asbestos contractors licensed/accredited by IDEM. (326 IAC 18-3)

*** An asbestos removal project means all activities involving the abatement, encapsulation, enclosure, renovation, repair, removal by accredited individuals, storage, stripping, dislodging, cutting or drilling that result in the disturbance of the following:**

1. **At least three (3) linear feet of regulated asbestos containing material on the facility.**
2. **At least three (3) square feet of regulated asbestos containing material on the facility.**
3. **A total of at least seventy-five hundredths (0.75) cubic feet of regulated asbestos containing material on the facility.**

These activities include, but are not limited to:

**Work area preparation
Implementation of engineering controls and work practices
Work area decontamination activities**

NOTE: An asbestos removal projects minimal amounts are for all of the buildings to be demolished/removed in a project, not just in one building. For example, if a road project included the demolition of 4 houses, you must total all of the regulated asbestos containing material on all four of the buildings to be demolished. Only if this total amount is *less than* the above amounts would the project *not* be considered an asbestos removal project.

BRIDGE ASBESTOS REMOVAL

There are several locations within a bridge structure that cannot be accessed by INDOT bridge inspectors. These locations could contain possible suspect asbestos containing material. Because of this situation, the following procedure is to be implemented during demolition/maintenance activities when suspected Regulated Asbestos Containing Material (RACM) is exposed that was not accessible during the asbestos inspection. Any suspected material that is friable (can be crumbled/pulverized by hand pressure alone) will need to be sampled. RACM need not be removed before demolition if it was not accessible for testing and was, therefore, not discovered until after demolition began and, as a result of the demolition, the material cannot be safely removed. The contractor shall be required to discontinue demolition or renovation activities and contact an accredited asbestos inspector. The asbestos inspector shall evaluate and sample the suspect material for the presence of asbestos. The sampled suspect material shall be set aside and kept protected and wet until results are known. If sampling and testing prove positive for the presence of asbestos, the exposed RACM and any asbestos contaminated debris must be treated as asbestos containing waste material and adequately kept wet at all times until disposed of by an accredited contractor. Proper disposal of this material shall be performed and a change order executed for the additional cost. This situation will be identified by a special provision.

Note: If a utility chooses to remove asbestos from lines that run through, in, or around an INDOT structure, they are required to abide by the above laws and regulations as INDOT.

ORDERED DEMOLITION

Ordered demolition's involve the demolition of facilities under order of a state or local governmental agency, issued because the facility is both structurally unsound and in danger of imminent collapse. Structures that are merely attractive nuisances are not considered ordered demolition under IDEM's rules. Under an ordered demolition, IDEM must be provided the following information:

1. Name, title, and authority of the state or local governmental representative who has ordered the demolition.
2. The authority is the applicable state or local regulation under which the demolition order has been issued.
3. Attach a copy of the demolition order to the notice.

Notification for an ordered demolition must be done as early as possible prior to demolition. In Marion County also notify the Indianapolis Air Pollution Control Division prior to removal.

In addition, an inspector is required to walk through and sample any rubble that is suspected asbestos containing material. Should lab analysis indicate the material is asbestos, it should be disposed of in a state approved landfill.

DEMOLITION/RENOVATION

The Project Engineer should allow no demolition work to occur on a building, bridge, or structure until the regulated asbestos containing material has been properly removed. **No regulated asbestos containing material removal work or demolition activities can begin on a date other than the start date on the most recent notification.** The asbestos removal contractor must be accredited and use only accredited asbestos removal workers for an asbestos removal project (see definition above of an asbestos removal project). An accredited asbestos removal project supervisor must be present for the removal of all regulated asbestos containing material. The following types of asbestos containing materials **do not have to be removed prior to demolition:**

1. **Category I nonfriable asbestos containing material that is not in poor condition, is not friable, and will not become friable during demolition. Poor condition is defined as peeling, cracking, chipping, or losing its physical integrity.**
2. **Category II nonfriable asbestos containing material with a low probability of becoming crumbled, pulverized, or reduced to powder during demolition and is kept adequately wet whenever exposed during demolition.**
3. **Material not accessible for testing, and therefore not discovered until after demolition began, and as a result of the demolition, the material could not be safely removed. The contractor shall be required to discontinue demolition or renovation activities and contact an accredited asbestos inspector. The asbestos inspector shall evaluate and sample the suspect material for the presence of asbestos. The sampled suspect material, shall be set aside and kept protected and wet until results are known. If sampling and testing prove positive for the presence of asbestos, the exposed RACM and any asbestos contaminated debris must be treated as asbestos containing waste material and adequately kept wet at all times until properly disposed of at an appropriate waste disposal site. Proper disposal of this material shall be performed and a change order executed for the added cost. This situation is identified in special provisions.**
4. **It is on a facility component that is encased in concrete or similarly hard material.**

When moving or relocating a building, IDEM requires the same compliance procedures that would be required if the building were to be demolished. Only those regulated asbestos

containing materials that would be disturbed such that they become friable by the move need be removed. For example, remove all regulated asbestos containing materials in the basement, floor joists, etc. Remember, **trailers are not regulated under these rules.**

BURNING

If a building is to be demolished by intentional burning, **all** asbestos containing materials including Category I and II non-friable asbestos containing material **must be removed** prior to burning. Asbestos containing material may not be burned. The removal and disposal must meet the appropriate regulations. If a local fire department requests that a building INDOT is intending to demolish be used for fire training purposes, then the fire department should be required to follow the appropriate asbestos notification/ removal/disposal regulations and provide proof of such to INDOT prior to burning the building. Since INDOT would still be the owner of the building, ultimately it is INDOT's responsibility to ensure that all regulations are met. Remember that an open burning variance must be obtained from IDEM prior to burning. See the Burning Section for detailed information and a copy of the Request for Variance Form.

DISPOSAL

All regulated asbestos containing material is considered special waste and must be packaged and labeled properly prior to disposal. It must be placed in leak-tight packaging that may be comprised of several layers. This packaging may be air-tight drums of metal, plastic, or fiber. The following labels must be attached to the packaging:

generator/operator label
transporter label
DOT marking stating - **R.Q. Asbestos NA2212**
OSHA label stating -
DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

Regulated asbestos containing material must be disposed of at specific landfill with a Variable Source Asbestos Approval (see attached listing). These landfills can accept the following regulated asbestos containing material without having to obtain case-by-case approval from IDEM:

1. Properly wetted, bagged, and labeled asbestos (40 CFR 61.145 and 40 CFR 61.150 (a)).
2. Transite and other Category II non-friable asbestos that is labeled and covered with a minimum of 6 inches of solid waste before compaction.
3. Asbestos encased in concrete or metal (such as furnaces and fire safes) and covered with a minimum of 6 inches of solid waste before compaction.
4. Friction products such as brake linings, clutch facings, etc.

If the contractor wishes to use a sanitary landfill not on the Variable Source Asbestos Approval list, then prior approval via a written request to IDEM is required. The generator may obtain approval via the Office of Solid and Hazardous Waste with a request containing the following information:

1. Generator's name, address, and telephone number.
2. Transporter's name, address and telephone number.
3. The proposed sanitary landfill and county which will receive the waste (prior contact with the landfill is recommended).
4. Accurate description of the waste material;
 - a. Location of demolition or renovation project.
 - b. Source of material such as piping, boilers, etc.
 - c. Volume/amount of waste materials.
 - d. Frequency of necessary disposal.

An *Asbestos Waste Shipment/Disposal Record* should accompany each load for disposal. This form, including instructions, is included in this manual. A description of the work site and an emergency response telephone number should be included. The waste disposal site completes their portion of the record and must send a copy to the generator/operator (INDOT). If you do not receive a completed copy of this record within 35 days of acceptance of the waste by the initial transporter, contact the transporter and/or the waste disposal site to determine the status of the asbestos sent for disposal. The transporter and/or the waste disposal site has 10 days to respond. If not, file a written exception report of IDEM's Office of Air Management's Asbestos Section. The report must include a copy of the record, a letter explaining the actions taken to locate the shipment, and the results of these actions.

Transite, and transite like material are nonfriable. However this brittle material easily releases asbestos during breaking. Because of this, OSHWM requires transite to be labeled and covered with a minimum of 6 inches of solid waste before compaction in an approved landfill.

If the following Category I non-friable asbestos containing material wastes are in good condition and have very little potential of becoming friable during removal, transportation and disposal they are exempted from special handling. These materials include the following:

- asphalt impregnated roofing materials**
- asphalt-based siding**
- resilient floor coverings (includes associated mastic)**
- packing**
- gaskets**

These Category I nonfriable asbestos containing materials do not require removal prior to demolition. They are not considered special waste and can be disposed of at any state-approved sanitary landfill as solid waste. No bagging, labeling, special handling, permits, or additional fees are required by this office for their disposal. Category I nonfriable asbestos containing materials in poor condition do not fall under this exemption (materials in poor condition are indicated by peeling, cracking, or crumbling and/or if the material will be or has been made friable by sanding, grinding, cutting, or abrading).

BRIDGE ASBESTOS EXCLUSION

To simplify and save cost on future bridge projects, contractors for all bridge construction and rehabilitation projects should provide the project engineer an asbestos exclusion letter (see attached). It should indicate the following:

I hereby certify that to the best of my knowledge no asbestos-containing material was used as a building material during this project.

Having this statement on file exempts all new construction/renovation projects from future asbestos inspection and abatement. **Please send a copy of this statement to the Environmental Services Section, Division of Pre-Engineering and Environment.**

ASBESTOS EXCLUSION LETTER

Date

**work address of Engineer for
Indiana Department of Transportation**

Att.: _____
Name, Engineer

Re: Asbestos Exclusion
Location/Description _____
Contract Number _____
Bridge Structure Number _____
Contractor's Name _____

Dear Engineer:

I hereby certify that to the best of my knowledge no asbestos containing material was used as a building material in this project.

Very truly yours,

signature of Contractor official

title of Contractor official

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
NOTIFICATION OF DEMOLITION AND RENOVATION OPERATIONS**

State Form 44593 (R/3-95)

I. TYPE OF NOTIFICATION (CHECK ONE): Original _____ Revised* _____ Canceled _____ Courtesy _____ <small>*Must include copy of notification which is being revised</small>			
II. FACILITY INFORMATION (identify owner, removal contractor, demolition contractor, inspector, and project designer)			
Owner: Address: City: _____ State: _____ Zip: _____ Contact: _____ Telephone#: ()			
Removal Contractor Address: City: _____ State: _____ Zip: _____ Contact: _____ Phone: _____ IN Accred#: _____ Expiration: _____		Demolition Contractor: Address: City: _____ State: _____ Zip: _____ Contact: _____ Phone: _____	
Inspector Address: City: _____ State: _____ Zip: _____ Contact: _____ Phone: _____ IN Accred#: _____ Expiration: _____ Phone: _____		(Required for asbestos projects at schools K-12) Project Designer: Address: City: _____ State: _____ Zip: _____ Contact: _____ Phone: _____ IN Accred#: _____ Expiration: _____ Phone: _____	
III. TYPE OF OPERATION (check one) Renovation: _____ Emergency Renovation: Intentional Burning: _____ Demolition: _____ Ordered Demolition: _____			
IV. IS ASBESTOS PRESENT? (Check one) YES: _____ NO: _____			
V. Procedures, including analytical methods, if appropriate, used to detect the presence and amount of asbestos material			
VI. Approximate Amount of Asbestos (Include Regulated ACM, Category I non-friable Category II non-friable ACM)			
	Regulated ACM to be removed	Non-friable Asbestos Material to be removed	
		Category I	Category II
		Non-friable Asbestos Material not to be removed before demolition	
		Category I	Category II
Pipes (InFt)			
Surface Area (SqFt)			
Total Volume (CuFt) on/off Components			
VII. SCHEDULED DATES OF ASBESTOS STRIPPING/REMOVAL: Start: _____ End: _____			
VIII. SCHEDULED DATES OF RENOVATION: Start: _____ End: _____ DEMOLITION: Start: _____ End: _____			
IX. FACILITY DESCRIPTION (Including building name, floor, and room number)			
Building Name: Street Address: City: _____ State: _____ County: _____ Location of removal within building: Building Size (SqFt.): _____ # of Floors: _____ Age: _____ Present Use: _____ Prior Use: _____			
X. DESCRIPTION OF PLANNED DEMOLITION OR RENOVATION WORK, METHODS/TECHNIQUES TO BE USED, AFFECTED FACILITY COMPONENTS AND TYPE OF MATERIALS REMOVED:			

XI. DESCRIPTION OF WORK PRACTICES AND ENGINEERING CONTROLS TO BE USED TO PREVENT EMISSIONS OF ASBESTOS AT THE SITE; INCLUDING ASBESTOS STRIPPING, REMOVAL AND WASTE HANDLING PROCEDURES TO PREVENT NON-FRIABLE ASBESTOS MATERIAL FROM BECOMING FRIABLE IN THE COURSE OF THE PROJECT:			
XII. DESCRIPTION OF PROCEDURES TO BE FOLLOWED IN THE EVENT THAT UNEXPECTED ASBESTOS IS FOUND OR PREVIOUSLY NON-FRIABLE ASBESTOS MATERIAL BECOMES CRUMBLLED, PULVERIZED, OR REDUCED TO POWDER:			
XIII. WASTE TRANSPORTER Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Contact: _____ Phone: _____	WASTE DISPOSAL SITE Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Contact: _____ Phone: _____		
XV. IF DEMOLITION ORDERED BY A GOVERNMENT AGENCY, IDENTIFY THE AGENCY BELOW AND ATTACH A COPY OF THE ORDER TO THIS FORM. Name: _____ Title: _____ Date ordered to begin: _____ Authority: _____ Date of Order: _____			
XVI. FOR EMERGENCY RENOVATIONS: Date and time of emergency Description of sudden, unexpected event: Explanation of how the event caused unsafe conditions or would cause equipment damage:			
XVII. I HEREBY CERTIFY THAT THE INFORMATION IN THIS NOTIFICATION IS CORRECT AND THAT I WILL ONLY USE INDIANA ACCREDITED WORKERS AND PROJECT SUPERVISORS, TO IMPLEMENT THIS ASBESTOS PROJECT, WHICH HAVE BEEN TRAINED IN 326 IAC 14-10; 40 CFR PART 61, SUBPART M; AND, IF APPLICABLE, INDIANAPOLIS AIR POLLUTION CONTROL BOARD REGULATION XIII. THE TRAINED INDIVIDUAL(S) ALONG WITH EVIDENCE THAT THE REQUIRED TRAINING WAS ACCOMPLISHED SHALL BE AVAILABLE AT THE JOB SITE DURING ACTUAL WORKING HOURS. <div style="display: flex; justify-content: space-between; margin-top: 20px;"> <div style="width: 60%;"> _____ owner/operator (signature) </div> <div style="width: 35%;"> _____ date </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 20px;"> <div style="width: 60%;"> _____ owner/operator (printed) </div> <div style="width: 35%;"> _____ affiliation </div> </div> <p style="font-size: small; margin-top: 10px;">*****OFFICE USE ONLY*****</p>			
POSTMARK:	RECEIVED:	REVIEWED BY:	DEFICIENCIES:
OPERATOR #:	NOTIFICATION #:	LOGGED:	CC TO:

ASBESTOS NESHAP INSPECTION AND REMOVAL REQUIREMENTS
FOR DEMOLITION AND RENOVATION PROJECTS

Regulatory Requirements:

1. Owner/operator inspection

Indiana Rule 326 IAC 14-10 and Section 61.145 of the November 20, 1990, Federal Asbestos National Emission Standard for Hazardous Air Pollutants (NESHAP) requires that prior to the commencement of any demolition or renovation operation, the owner or operator of the subject facility thoroughly inspect the affected facility or part of the facility where the operation will occur for the presence of asbestos, including both friable and nonfriable forms of asbestos. All friable asbestos-containing material must be removed from a facility being demolished or renovated before any wrecking or dismantling that would break up the materials or preclude access to the materials for subsequent removal. All asbestos-containing material must be removed before the intentional burning of a facility. Asbestos-containing materials may not be burned. Indiana rule 326 IAC 14-10-4(6)(A) and 329 IAC 2-21-5 (Special Waste) includes the proper labeling, packaging and disposal requirements for asbestos-containing waste.

2. Notification to IDEM of demo/reno operation

Indiana rule 326 IAC 14-10 (Emission Standard for Asbestos; Demolition and Renovation Operations) requires written notification on a form (attached) provided by the IDEM for renovation operations above a certain size and for **all** demolition operations (even if no asbestos is discovered during the inspection). Also attached is an IDEM Guidance Document for preparing the notification form. 326 IAC 14-10 also requires that certain emission control procedures/work practices be followed (such as adequate wetting of the asbestos-containing materials) to ensure safe asbestos removal. Demolition/renovation notification fees are assessed quarterly to owners/operators submitting notifications during the previous quarter. Fees range from \$50 to \$150 per project; determined by the type of project and amount of asbestos-containing material involved. Fees are assessed even if no asbestos is involved in a demolition project.

3. Use of IDEM accredited personnel

Indiana rule 326 IAC 18-3 (Accreditation; Asbestos Removal Personnel) requires that persons who inspect for asbestos-containing material at a facility subject to 326 IAC 14-10 be accredited by holding a current certificate of accreditation issued by the commissioner of IDEM. This rule also requires that only accredited asbestos removal contractors, project supervisors, and workers be employed on asbestos removal projects at facilities covered by 326 IAC 14-10. Listings of accredited persons and asbestos removal contractors are periodically updated by IDEM's Office of Air Management and disseminated upon request.

4. Regulated facilities

Facilities covered by 326 IAC 14-10 are institutional, commercial, public, industrial or residential structures, installations, or buildings (excluding apartment buildings and privately owned homes with no more than four dwelling units and will not be demolished by intentional burning). Examples of subject facilities are (but not limited to): bridges; tunnels; military installations, including dependent housing; chemical/power plant installations; indoor shopping malls; homes which are part of an urban renewal project; a highway construction project, or other public or private commercial development projects; groups of residential buildings under the control of the same owner or operator and part of the same demolition or renovation project (even if the homes are not proximate to each other); structures undergoing partial demolition;

churches; amusement parks or State fairgrounds; jails/prisons; nursing homes; parking garages; and certain commercial farm structures.

5. Exempt structures

Small constructions such as livestock barns, outhouses, vegetable/fruit stands, prefab sheds, smokehouses, and similar structures may not be considered structures as defined by the NESHAP regulation. Such constructions are not subject to the NESHAP if they meet **ALL** of the following criteria:

“The construction must contain only materials such as wood, stone, brick, metal, and glass.”

The construction **cannot** have improvements (water, sewer, electricity, ect....)and **cannot** contain any suspect asbestos-containing materials that have been used as insulation or for acoustical or decorative purposes. Such materials are generally located on plumbing, heating and air-conditioning systems, sprayed or trowelled-on ceilings including ceiling tiles, interior sheetrock walls and ceilings, multi-layer floors with floor tile or linoleum coverings, interior or exterior transite siding or roll roofing materials that may contain asbestos felts or asbestos shingles located on the roof and/or exterior walls.

If a construction meets these criteria, the inspection requirement and notification provision of the NESHAP asbestos regulation is not applicable. Therefore, the owner/operator would not have to be an Indiana accredited asbestos inspector by the IDEM. Keep in mind that either the owner or operator would make sure the construction did meet the above criteria prior to any live burn training exercise.

6. Contacts for additional information

If you are uncertain whether the NESHAP regulation applies to any construction which you wish to burn, please contact the Office of Air Management at (317) 232-8220 or 232-8416. **Demolition of a structure by intentional burning without a prior asbestos inspection and notification may be NESHAP applicable and could result in an enforcement case and assessment of civil penalties (fines) against the owner and operator.**

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
NOTIFICATION OF DEMOLITION AND RENOVATION OPERATIONS**

INSTRUCTIONS:

The attached form must be used to meet notice requirements pursuant to Indiana Rule 326 IAC 14-10. The form may also be used to meet notification requirements pursuant to: Indianapolis Air Pollution Control Board (IAPCB) Regulation XIII, (for projects in Indianapolis/Marion County, Indiana). Provide written notice of intent to demolish or renovate according to the notification schedules indicated below and update such notice as necessary, including when the amount of affected asbestos-containing material changes. **In no event** shall stripping, removal, or demolition activities begin on a date other than the date given in the most recent notification. Failure to provide a timely and/or complete notification is a violation of state, federal, and local regulations and may result in an enforcement action. Per 326 IAC 14-10-5, demolition/renovation fees will be assessed quarterly to owners/operators submitting notifications during the previous quarter.

NOTIFICATION SCHEDULES:

PURSUANT TO 326 IAC 14-10-3 AND IAPCB REGULATION XIII:

Demolition Projects: All regulated demolition projects which includes facilities with no asbestos = 10 working days prior to the wrecking or taking out of any load supporting structural member.

“WORKING DAY” means Monday through Friday and includes holidays that fall on any of the days Monday through Friday.

Renovation Projects: ≥ 260 LnFt, 160 SqFt, or 35 CuFt = 10 working days prior to asbestos removal project.

<260 LnFt, 160 SqFt, or 35 CuFt = notification not required

MARION COUNTY ONLY: ≥ 25 LnFt, 15 Sqft, or 35 CuFt = 10 working days prior to asbestos removal.

Ordered Demolitions: As early as possible before demolition begins.

MARION COUNTY ONLY: Also notify Division in person or by telephone before removal begins.

Emergency Renovations: As early as possible before asbestos stripping or removal begins.

MARION COUNTY ONLY: Also notify Division in person or by telephone before removal begins.

Revised Start Date: All revisions **must** include a copy of the notification being revised. If a demolition, including demolitions with no asbestos, will begin on a date **later** than the date specified in the original or the most recent revised notification, written notice of the new demolition start date must be postmarked at least 5 working days or delivered at least 2 working days before the start date of demolition specified in the notification that is being revised.

If a demolition will begin on a date **earlier** than the date specified in the original or the most recent revised notification, written notice of the new demolition start date must be postmarked at least 10 working days before the start of demolition.

When the stripping or removal of asbestos-containing material in a demolition or renovation operation involving the stripping or removal of at least 260 LnFt, 160 SqFt, or 25 CuFt of RACM (Marion County only, 25 LnFt, 14 SqFt, or 35 CuFt), will begin on a date **later** than the date specified in the original or most recent revised notification, provide written notice of the new start date postmarked at least 5 working days or delivered 2 working days before the start date of asbestos stripping or removal specified in the notification that is being revised.

When the stripping or removal of asbestos-containing material in a demolition or renovation operation involving the stripping or removal of at least 260 LnFt, 160 SqFt, or 35 CuFt of RACM (Marion County only, 25 LnFT, 15 SqFt, or 35 CuFt) will begin on a date **earlier** than the date specified in the original or most recent revised notification, provide written notice of the new start date postmarked or delivered at least 10 working days before the start date of asbestos stripping or removal work begins.

MARION COUNTY ONLY: Notify Division in person or by telephone prior to removal of any friable asbestos, stating cause for the change and anticipated removal dates; and submit revised notice within 5 days.

MAIL OR DELIVER THE NOTICE TO :

1. **State of Indiana:**

Indiana Dept. of Environmental Management
Office of Air Management
100 North Senate Avenue
P.O. Box 6015
Indianapolis, Indiana 46206-6015

2. **For Operations Implemented in Indianapolis/Marion County, ALSO submit to:**

Environmental Resources Management Division
2700 South Belmont Avenue
Indianapolis, Indiana 46221

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
GUIDANCE FOR PREPARING ASBESTOS
DEMOLITION/RENOVATION NOTIFICATIONS**

**** Per Indiana Rule 326 IAC 14-10-3(1) , all notifications to the IDEM MUST be submitted on State Form Number 44593 (R/3-95)**

Per 326 IAC 14-10-5, demolition/renovation fees will be assessed quarterly to owners/operators submitting notifications during the previous quarter.

I. Type of Notification - 326 IAC 14-10-3(4)

- A. If this is the original notice, please check the appropriate space on the notification form.
- B. If this is a revised notice, please check the appropriate space on the notification form. The revised notice must be postmarked and sent by certified mail, return receipt requested, at least 5 working days or delivered at least 2 working days before the start date of asbestos stripping or removal specified in:
 - 1. the notice being revised and
 - 2. the new revised notice.Facsimiles will be accepted by the IDEM.

C. All revisions must include a copy of the notice being revised.

D. If this is a canceled notice, please check the appropriate space on the notification form.

E. Courtesy Notification

II. Facility Information - 326 IAC 14-10-3(3)(B) and (R)

A. Either the owner or operator must submit the notice

B. The owner means the individual(s) who own the property or lease the property.

C. The operator means the asbestos removal contractor or demolition contractor.

D. Specify the name, address, telephone number, Indiana accreditation number and accreditation expiration date, of the:

1. asbestos removal contractor
 2. inspector who conducted the assessment prior to demolition or renovation, and
 3. project designer required for asbestos projects at schools K-12, or if project designer is used for non-school projects must be accredited.
- III. Type of Operation - 326 IAC 14-10-3(3)(C), (O) and (S)
- A. Refer to the definitions of demolition, renovation, and emergency renovation operations in 326 IAC 14-10-2.
 - B. Ordered demolitions and emergency renovation operations have additional notification requirements. Owner/operator must also complete Section XV or XVI of notification form.
 - C. Demolition by intentional burning must comply with an approved Variance from the Open Burning regulation 326 IAC 4-1.
- IV. Is Asbestos Present? - Required by Federal 40 CFR Part 61, Subpart M.
- A. If asbestos is present, indicate "yes" in the space provided.
 - B. If asbestos is not present, indicate "no".
- V. Procedures, Including Analytical Methods, If Appropriate, Used to Detect the Presence and Amount of Asbestos Material - 326 IAC 14-10-3(3)(E).
- Describe how the asbestos was detected and, if samples were analyzed, specify the analytical method. Procedures could include estimating the amount of friable asbestos visually during a walk-through inspection using a tape measure, blueprints, or pacing. Analytical methods could include the collection of samples and sample analyses by a polarized light microscope with dispersion staining.
- For samples that test under 10% asbestos content: An owner or operator may
1. elect to assume material to be greater than 1% asbestos, or
 2. require verification by point counting in which the point counting result will supersede the visual estimation. Either choice and result should be stated on the notice when a sample is under 10% asbestos.
- VI. Approximate Amount of Asbestos to be Removed - 326 IAC 14-10-3(3)(F).
- A. Specify the amount of regulated (friable) asbestos-containing material to be removed as follows:
 1. linear feet on pipes
 2. square feet (surface area) on other facility components, **and**
 3. total cubic feet (volume) on or off all facility components. (All reported regulated amounts must be converted to cubic feet).
 - B. Estimate the approximate amount of Category I and Category II non-friable asbestos-containing material in the affected part of the facility that will be removed before demolition.
 - C. Estimate the approximate amount of Category I and Category II non-friable asbestos-containing material in the affected part of the facility that will not be removed before demolition.
- VII. Scheduled Dates of Asbestos Stripping/Removal - 326 IAC 14-10-3(3)(H).
This means the actual start and end dates of the asbestos stripping or removal.
- VIII. Scheduled Dates of Demolition/Renovation - 326 IAC 14-10-3(3)(I) and (J).
This means the starting and ending dates of the total demolition or renovation operation. For example: A renovation project may be scheduled from February 1 through March

15, 1995, however the actual asbestos removal will occur from February 15 through February 20, 1995, Demolition **must** start on date given in most recent notification.

- IX. Facility Description - 326 IAC 14-10-3(3)(D) and (G).
Including the building name, floor and number of the room(s) where the asbestos stripping or removal will take place. Provide enough detail that an unfamiliar inspector can find the asbestos project without asking anyone.
- X. Description of Planned Demolition or Renovation Work, Methods/Techniques to be Used, and Affected Facility Components - 326 IAC 14-10-3(3)(K).
Briefly describe the methods to be used to conduct the demolition or renovation. For renovations, these methods may include gross removal, glove bag removal, hand stripping or scraping. For demolitions, methods may include a wrecking ball, bulldozer, dynamite, or unbolting panels or sections and carefully lowering to the ground. Affected facility components may include pipe wrap, floor tile, sprayed-on insulation, transite, etc.
- XI. Description of Work Practices and Engineering Controls to be Used to Prevent Emissions of Asbestos at the Site, Including Asbestos Stripping, Removal, and Waste Handling Procedures and the Procedures to Prevent Non-Friable Asbestos Material from Becoming Friable in the Course of the Project - 326 IAC 14-10-3(3)(L).
- A. Examples of work practices and engineering controls to prevent asbestos emissions at the site would include: the use of water or wetting agents, containments, and negative air units during removal; placing into leak-tight containers or wrapping with 6 mil thick polyethylene plastic sheeting which is properly labeled prior to disposal, etc.
- B. Examples of removal and waste handling procedures to prevent non-friable material from becoming friable would include: removing by sections or units taking care not to crumble, pulverize, or reduce to powder, using water to prevent any emissions, placing into leak-tight containers or wrapping with six (6) mil thick plastic which is properly labeled prior to disposal (including name of waste generator and location at which the waste was generated), ect.
- XII. **Description of Procedures to be Followed in the Event that Unexpected Asbestos is Found or Previously Non-Friable Asbestos Material Becomes Crumbled, Pulverized or Reduced to Powder - 326 IAC 18-3 and 326 IAC 14-10-3(3)(M).
- A. If the amount of unexpected asbestos or previously non-friable asbestos material is > 3 linear feet on pipes, 3 square feet on other facility components, or a total of 0.75 cubic feet on or off all facility components, then an accredited contractor (unless in-house accredited personnel) with accredited personnel must implement the asbestos removal project in accordance with the requirements of 326 IAC 14-10.
- B. Pursuant to 326 IAC 14-10, a revised demolition/renovation notification must also be submitted to the IDEM and USEPA Region V which reflects the change in the amount of affected asbestos-containing material. The revised notice must also reflect the new asbestos removal start date, if applicable.

**Required by 40 CFR Part 61, Subpart M

- XIII. Waste Transporter - 326 IAC 14-10-3(3)(T).

Provide the name, address, and telephone number of only the asbestos waste transporter. This should include the waste transporter name, street address, city, state, zip code, contact person, and telephone number.

- XIV. Waste Disposal Site - 326 IAC 14-10-3(3)(N).
Provide the name and location of the sanitary landfill where the asbestos-containing waste materials will be disposed. This should include the name, street address, city, state, zip code, waste disposal site contact person, and telephone number.
- XV. If Demolition Ordered by a Governmental Agency, Identify the Agency and Attach a Copy of the Order - 326 IAC 14-100-3(3)(O).
- A. Provide the name, title, and authority of the state or local governmental representative who has ordered the demolition.
 - B. The authority is the applicable state or local regulation under which the demolition order has been issued.
 - C. Attach a copy of the demolition order to the notice.
- XVI. Emergency Renovations -s 326 IAC 14-10-3(3)(S).
- A. Specify:
 - 1. the date and hour that the emergency occurred,
 - 2. a description of the sudden, unexpected event, and
 - 3. an explanation of how the event has caused emergency conditions.
 - B. An “emergency renovation operation” is a renovation operation that was not planned but results from a sudden, unexpected event. This term includes operations necessitated by non-routine failures of equipment.
- XVII. Certification Statement and Signature by Owner/Operator - 326 IAC 14-10-3(3)(O) and (P).
Self-explanatory.

ASBESTOS WASTE SHIPMENT/DISPOSAL RECORD

GENERATOR											
1. WORK SITE Name: Mailing: Address: Location:	2. OWNER Name: Mailing: Address: Phone:										
3. OPERATOR/CONTRACTOR Name: Mailing: Address:	4. AUTHORIZED AGENT Name: Phone:										
WASTE											
5. WASTE DISPOSAL SITE (WDS) Name: Mailing: Address: Location: Phone:	6. ORIGIN OF WASTE County: State: 7. RESPONSIBLE AGENCY Name: Address:										
8. DESCRIPTION: R.Q., ASBESTOS, NA2212 SHIPPING NAME: RQ., ASBESTOS, NA2212, 9, P.G.III	9. Containers number	type	10. Total Quantity CuFt. CuYds. Lbs tons								
11. SPECIAL HANDLING INSTRUCTIONS AND ADDITIONAL INFORMATION EMERGENCY RESPONSE PHONE NUMBER:											
12. OPERATOR'S CERTIFICATION I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.											
_____ Name (printed or typed) Title Signature Date (MM/DD/YY)											
13. TRANSPORTERS <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; border: none;"> TRANSPORTER #1 acknowledgment of receipt of materials </td> <td style="width: 50%; border: none;"> TRANSPORTER #2 </td> </tr> <tr> <td style="border: none;"> Name: Address: Phone: </td> <td style="border: none;"> Name: Address: Phone: </td> </tr> <tr> <td style="border: none;"> _____ Name (printed or typed) Title </td> <td style="border: none;"> _____ Name (printed or typed) Title </td> </tr> <tr> <td style="border: none;"> _____ Signature Date (MM/DD/YY) </td> <td style="border: none;"> _____ Signature Date (MM/DD/YY) </td> </tr> </table>				TRANSPORTER #1 acknowledgment of receipt of materials	TRANSPORTER #2	Name: Address: Phone:	Name: Address: Phone:	_____ Name (printed or typed) Title	_____ Name (printed or typed) Title	_____ Signature Date (MM/DD/YY)	_____ Signature Date (MM/DD/YY)
TRANSPORTER #1 acknowledgment of receipt of materials	TRANSPORTER #2										
Name: Address: Phone:	Name: Address: Phone:										
_____ Name (printed or typed) Title	_____ Name (printed or typed) Title										
_____ Signature Date (MM/DD/YY)	_____ Signature Date (MM/DD/YY)										
WASTE DISPOSAL SITE											
14. DISCREPANCY INDICATION SPACE											
15. CERTIFICATION OF RECEIPT I hereby certify that the above named material has been accepted and that to the best of my knowledge the foregoing is true except noted above.											
_____ Name (printed or typed) Title Signature Date (MM/DD/YY)											

INSTRUCTIONS

NOTE: THIS FORM FULFILLS BOTH FEDERAL AND STATE NOTIFICATION REQUIREMENTS FOR DISPOSAL OF ASBESTOS CONTAINING WASTE MATERIAL.

1. Enter the name and address of the *facility* at which at which asbestos waste is generated.
2. Enter the name of the *owner* of the facility, and the name and phone number of a contact person.
3. Enter the name, address, and phone number of the *company* responsible for performing the asbestos removal.
4. Enter the name and phone number of the *authorized agent* of the company responsible for performing the asbestos removal.
5. Enter the name, address, physical site location, and phone number of the *waste disposal site*. Enter “on-site” if the waste will be disposed of on the generator’s property.
6. Enter the county and state of the *facility* from which the waste was removed.
7. Provide the name and address of the local, state or EPA regional office responsible for administering the asbestos *NESHAP program*. For Indiana, the *responsible agency* is: **Indiana Department of Environmental Management, Office of Air Management, P.O. Box 6015, 100 North Senate, Indianapolis, IN. 46206-6015, Phone # 317/232-8373.**
8. Indicate the types of asbestos waste materials generated. If from a demolition or renovation, indicate the amount of asbestos that is *Friable* and *Nonfriable*.
9. Enter the number of *containers* used to transport the asbestos materials listed in item 8. Also enter one of the following container codes: *DM* (metal drums/barrels), *DF* (fiber drums/barrels), *DP* (plastic drums/barrels), *BA* (6 mil plastic bags/wrapping). If none of these apply, specify what was used in transporting each type of asbestos material.
10. Enter the *quantities* of each type of asbestos material removed in units of cubic feet, cubic yards, pounds, or tons. Indicate which units are used.
11. Enter any *special transportation, treatment, storage, disposal, or Bill of Lading* information. If an *alternate waste disposal site* is designated, note it here. Emergency response telephone numbers or similar information may be noted here.
12. Enter the name and title of the *authorized agent* of the waste generator who must then read, sign, and date this certification. The date is the date of the receipt by the transporter.

NOTE: THE GENERATOR MUST RETAIN A COPY OF THIS FORM. IF A COMPLETED COPY IS NOT RECEIVED WITHIN 35 DAYS OF ACCEPTANCE OF THE WASTE BY THE INITIAL TRANSPORTER, THE TRANSPORTER AND/OR THE WDS MUST BE CONTACTED. IF A COMPLETED COPY IS NOT RECEIVED WITHIN 45 DAYS, A WRITTEN EXCEPTION REPORT MUST BE SENT TO THE RESPONSIBLE AGENCY.

13. Enter the name, address and telephone number of each *transporter* used (if applicable). Print or type the full name and title of the person accepting responsibility and acknowledging receipt of materials as listed on this waste shipment record for transport.

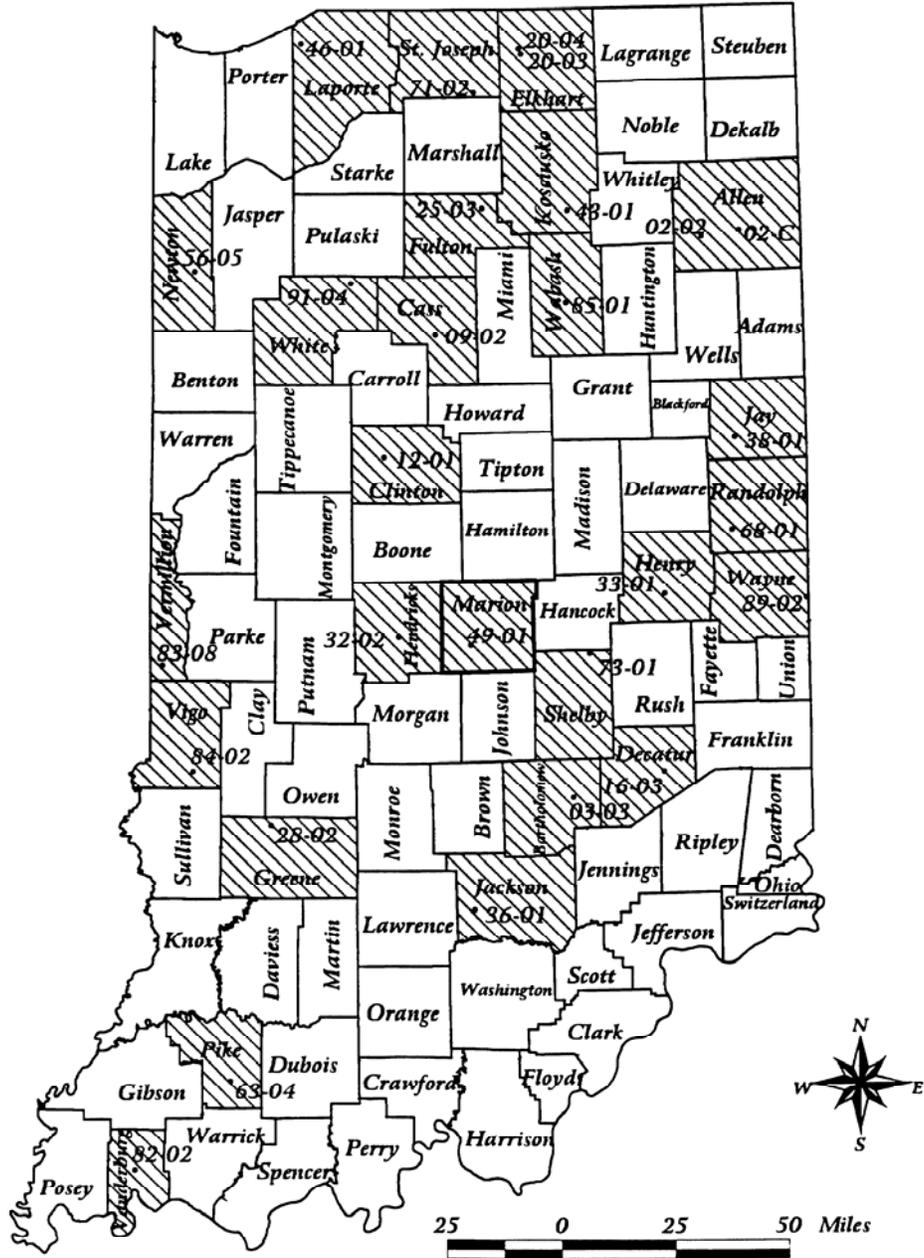
The responsible party must then sign and date the document. The date is the date of receipt.

NOTE: THE TRANSPORTER MUST RETAIN A COPY OF THIS FORM

14. The authorized representative of the *waste disposal site* (WDS) must note here *any discrepancy* between waste described on this manifest and waste actually received (i.e. number of containers listed different from number received, or improperly enclosed or contained waste). Any rejected materials should be listed and destination of those materials provided. A site that converts asbestos-containing waste material to non-asbestos material is considered a WDS. **NOTE:** The WDS should contact the generator to determine the reason for any discrepancies noted and include the reasons in this section. If a reasonable explanation is not found within fifteen (15) days, the WDS must send a written discrepancy report to the *responsible agency*. If significant amounts of improperly enclosed waste is discovered, the WDS must file a written report describing the problem to the *responsible agency* within one (1) working day. If the *responsible agency* at the generator site is different from that at the disposal site, any reports must go to both agencies.
15. Enter the name and title of the *authorized agent* of the WDS who must then sign this document as an indication of his or her acceptance and agreement with statements on this manifest except as noted in item 14. The date is the date of signature and receipt of shipment.

NOTE: THE WDS MUST RETAIN A COMPLETED COPY OF THIS FORM AND SEND A COMPLETED COPY TO THE OPERATOR LISTED IN ITEM THREE (3) AND THE GENERATOR LISTED IN ITEM TWO (2) WITHIN THIRTY (30) DAYS OF THE ACCEPTANCE OF THE WASTE BY THE INITIAL TRANSPORTER.

Special Waste Disposal Sites



Indiana Special Waste Disposal Sites

Facility ID #	Facility Name	County Name	Waste Type	Restriction	Phone #
03-03	Bartholomew County Landfill	Bartholomew	SpAP	-	812/376-2614
63-04	Blackout RDF	Pike	SpAP	-	812/789-2647
73-01	Caldwell Landfill	Shelby	H SpAP	-	317/763-1238
02-C	Chemical Waste Mgmt.	Allen	SpAP	-	219/447-5585
25-03	County Line Landfill	Fulton	SpAP	-	219/892-6483
16-03	Decatur Hills Landfill	Decatur	SpAP	-	812/663-6703
46-01	Deercroft RDF	LaPorte	SpAP	-	219/879-4653
20-03	Earthmovers Landfill	Elkhart	SpAP	-	219/875-5232
20-04	Elkhart County Landfill	Elkhart	SpAP	-	219/522-2581
33-01	Hayes Landfill	Henry	SpAP	-	317/529-2337
38-01	Jay County Landfill	Jay	SpAP	-	219/726-2871
82-02	Laubscher Meadows Landfill	Vanderburgh	SpAP	-	812/963-4690
91-04	Liberty Landfill	White	SpAP	-	219/278-7139
12-01	Montgomery Landfill	Clinton	SpAP	-	317/654-8144
02-02	National Serv-All Landfill	Allen	SpAP	R	317/248-4117
89-02	New Paris Pike Landfill	Wayne	SpAP	-	317/983-7440
56-05	Newton County Landfill	Newton	SpAP	-	219/394-2808
09-02	Oak Ridge RDF	Cass	SpAP	-	219/722-5771
71-02	Prairie View RDF	St. Joseph	SpAP	-	219/546-4475
68-01	Randolph Farms Landfill	Randolph	SpAP	-	317/853-5714
43-01	Ransbottom Landfill	Kosciusko	SpAP	R	219/839-0300
36-01	Rumpke (Medora) Landfill	Jackson	SpAP	R	812/966-2017
49-01	Southside Landfill	Marion	SpAP	-	317/247-6808
32-02	Twin Bridges RDF	Hendricks	SpAP	-	317/745-2878
84-02	Victory Environmental-Yaw Hill	Vigo	SpAP	R	812/299-9227
85-01	Wabash Valley Landfill	Wabash	SpAP	R	219/563-8479
83-08	West Clinton Landfill	Vermillion	SpAP	R	317/832-0136
28-02	Worthington Landfill	Greene	SpAP	R	812/875-2545

- Sp: Landfills that may accept special waste which has been certified as such by the IDEM.
- A: Landfills that have a Variable Source Asbestos Approval and can accept properly packaged asbestos. Additional permits are not necessary for normal asbestos disposal at these landfills, but asbestos disposal notification forms are required.
- P: Landfills that are pre-approved to accept contaminated soils and cleanup debris from the spill or leaking of diesel oil, fuel oil, asphalt, oils not containing PCB's, hydraulic fluid, jet fuel, kerosene, and gasoline. No additional permits are needed, but petroleum spill disposal notification forms are required.
- H: Permitted hazardous waste disposal facility. Special wastes may be disposed without prior approval.
- R: This landfill may be operating cells with more than one type of cell design; however, special waste may be disposed of in cells meeting 329 IAC 2 or Subtitle D standards only, unless written approval has been obtained from the IDEM on a case-by-case basis, such approval will be indicated under the special conditions portion on the generator's Special Waste Certification.

SNOW AND ICE CONTROL

INTRODUCTIONS

The purpose of the Snow and Ice Control Procedures is to provide for uniform understanding and to establish guidelines for achieving the Department's goals and objectives for snow and ice control. Effective snow and ice removal requires a concentrated and coordinated effort from all parts of the maintenance organization.

Labor, equipment, and materials are used to remove snow and ice from the roadways. Each winter storm has unique characteristics. Decisions about the use of labor, equipment, and materials must be fitted to the characteristics of the storm. The operating procedures will provide information and guidelines intended to direct field supervisors in making choices for the most effective and efficient operations.

Work during a storm is only a part of effective snow and ice removal. Preparation for removal efforts is equally important. Equipment must be in the best possible condition. Materials must be stockpiled. Equipment Routes must be developed. All personnel need to be trained in their duties during a storm. All of this and more must take place prior to the first storm. The operating procedures will point out the preparations that should take place and provide guidelines for the preparations.

DEPARTMENT OBJECTIVES

The Indiana Department of Transportation has an objective of removing snow and ice from the driving surface. The Department recognizes that some tradeoffs have to be made when reacting to a winter storm. One extreme reaction would be to do nothing. The other extreme reaction would be to provide for melting of the snow as it reaches the pavement. The Department does not have the luxury of either extreme.

The intermediate objective of the Department is to keep all roadways passable during a winter storm. Sometimes this will not be possible. Closed roadways will be opened as soon as possible.

Two classifications of road have been established for setting priorities, desirable levels of service, and to provide time frames for achieving the Department objective of snow and ice-free surfaces.

Classification

The Department recognizes that all Indiana State Highways are important. The lowest traffic count road on the system might be the most important road in the state to the people who live there. However the Department must have a realistic perspective when considering priorities and service levels to be provided. Service should be provided to all roads, but the concentration of service must be placed where the greatest number of motorists can receive benefits of the service.

There are two reasons for classifying state highways. First, classification provides a means of establishing relative priorities for providing service. Second classification provides a system of establishing acceptable roadway conditions. Generally, higher classification roads should receive more service than a road in a lower classification. More service should result in roads in a higher class being free of snow and ice sooner than roads in a lower class. The two classes of roads are:

CLASS I

Interstate routes and roads over 5,000 ADT as well as other roads with special situations.

CLASS II

Those routes with traffic volumes of 5,000 ADT or less

Classification is the first step in developing snow and ice routes. Example: The average daily traffic count should be the first consideration in classifying a road. Each district will be responsible for classifying and approving the routes within the district. Maps showing the classification will be forwarded to the Operations Support Division.

Other circumstances may warrant exception to the established criteria. These include local considerations and knowledge of roads. A hospital on a Class II route may warrant a shift in priorities.

Levels of Service

A level of service is defined as the desired result of service provided. The eventual result is driving surfaces that are free of snow and ice. Intermediate objectives, or levels of service, have been set by the Department in the interest of practicality and economics.

The intermediate objectives are defined by road classification and describe conditions that are acceptable levels of service.

CLASS I

Provide continuous service to blade remove snow and ice from pavement surface and shoulders and apply chemicals and abrasives as needed to provide a wet and reasonably bare pavement. Class I serviced in approximately 2 hours.

CLASS 11

Provide continuous service to remove blade snow and ice from pavement surface and apply chemicals and abrasives as needed to obtain a reasonably bare pavement. Final clean up will be deferred to normal working hours. Class 11 serviced in approximately 3 hours.

The levels of service have two purposes. First, they are used as guidelines for supervisors when making assignments during a storm. Second, they are used to limit work during overtime pay status while providing for adequate driving conditions.

The routes are designed so that a truck is assigned to each driving lane on all roadways. Generally, trucks should remain on assigned routes. However, in server storms or when trucks or drivers are not available to service all routes, service may concentrate on roads with higher classifications due to their higher traffic volumes. However, field supervisors may assign trucks to problem areas regardless of classification.

Fore example, a Class II road might be in danger of becoming impassable while a Class I route is providing adequate service. The truck assigned to the Class I route can be temporarily assigned to the Class II route to relieve the problem.

Cleanup begins after the storm ends and after the levels of service by classification have been achieved.

Under some circumstances, cleanup during overtime hours may be advisable. For example, storm may have ended and all roads are providing the desired levels of service, but temperatures are dropping rapidly and are expected to remain low, or another storm is approaching. Removal operations should continue to remove as much snow and ice as possible prior to the freeze.

Cleanup includes plowing and spot use of materials to remove all snow and ice from the driving surface. This work also includes plowing back shoulders, crossovers and approaches, cleaning and opening frozen drains, and equipment cleanup.

RESPONSIBILITIES

Snow and ice removal require a highly coordinated effort. Each individual involved in the snow and ice effort must be familiar with, and perform all assigned responsibilities.

1. Department
 - + Provided Goals and Objectives
2. Chief Highway Engineer
 - + Approve Operating Procedures
3. Operations Support Division
 - + Develop Goals and Operating Procedure recommendations
 - + Determine needs, write specifications, and develop repair and maintenance program for snow and ice removal equipment
 - + Develop training materials
 - + Provide assistance and guidance in implementation of Operating Procedures
 - + Evaluate effectiveness of Operating Procedures
 - + Coordinate Salt Procurement
 - + Coordinate Weather Service
4. District Operations
 - + Provide assistance and guidance to Subdistricts to ensure implementation of Operating Procedures
 - + Oversee the inspection of equipment to ensure fleet is prepared for winter
 - + Coordinate equipment allocation, routing and calibration
 - + Ensure that adequate stockpiles of material are on hand and that orders have been placed for these materials
 - + Coordinate training programs
 - + Review snow and ice control reports and effectiveness of operations
 - + Coordinate winter transfers
 - + Develop and approve route designs

5. Subdistrict

- + Prepare equipment routing assignments
- + Inspect and repair equipment to ensure fleet is prepared for winter
- + Make arrangements for receiving and interpreting weather and road condition reports
- + Keep material stockpiles at adequate levels
- + Direct subdistrict operations. Prepare snow and ice control reports and evaluate effectiveness of operations
- + Conduct annual snow and ice removal training

6. Unit

- + Perform routine equipment maintenance and report breakdowns
- + Make routine checks on stockpiles and report quantities of material on hand
- + Make work assignments
- + Ensure that materials are applied timely and at recommended application rates
- + Ensure proper storage and cleanup of materials and equipment

PREPARATION FOR WINTER

1. Equipment Inspection

Each fall, as directed by the District Operations Engineer, an inspection by district and subdistrict personnel should be made of all snow and ice equipment to ensure that it is properly repaired and ready for snow and ice removal.

Each vehicle should be inspected against a predetermined checklist. Equipment not passing the inspection should be red tagged. A timely follow up inspection should be completed to ensure that all red tagged equipment has been repaired. Unsafe equipment should not be used for snow and ice removal efforts.

2. Spreader Calibration

Materials spreading equipment must be calibrated prior to the winter season with assistance by District personnel, as needed. Each spreading unit should be calibrated to provide an application rate of 250 pounds of material per lane mile. A chart listing the various driving speeds and spreader setting combinations for the designated application rates should be prepared for each spreading unit/truck.

3. Routing

Routes will be designed for all roads in accordance with separate routing instructions. Each equipment route should be developed to include only one class of road to provide a uniform level of service on the route and to avoid confusion to the operator. The location of garage and stockpile facilities must be considered when laying out routes. Existing unit, subdistrict and district boundaries can and should be crossed if necessary for more efficient routing. Turn around points are to be coordinated with adjoining units, subdistricts as districts. All changes to routes should be made and all routes finalized by October 15 of each year. Routes are to be well documented with copies forwarded to the Operations Support Division.

4. Material Stockpiling

Prior to the winter season, make sure that sufficient quantities of chemicals and abrasives have been obtained and stockpiled. Chemicals and abrasives should be stored at convenient, well drained locations to minimize deadheading of spreading equipment. If necessary, abrasives could be treated with 100 # of salt or 50# of calcium chloride flakes or 3 gallons of liquid chloride per cubic yard to keep the stockpile from freezing.

Chemicals should be placed in covered storage unless no other alternative exists. If chemicals are to be stored in open bins or stockpiles they must be protected by canvas tarpaulin or vinyl type covering. It is suggested that a window of abrasives be placed around all outside stockpiles.

5. Training

Each management level of the maintenance organization has responsibilities for training in snow and ice removal. Training should provide for uniform understanding of the Snow and Ice Objectives and Procedures. Supervisors at all levels have the responsibility to train their subordinates. Each subdistrict, with guidelines from the district, should establish training sessions on winter maintenance. These sessions are to be held annually. They should include actual demonstrations with the equipment, review of the Department Objective and Procedures, storm conditions, applications rates, and safety.

6. Snow Fences

The prevention of snowdrifts require close and continuous study. Drifts may be caused by very minor windbreaks, such as stubble, uncut weeds, brush or fences along the roadway. Any obstruction that decreases the velocity of an air current may cause drifting snow, and the removal or control of the obstruction is essential to the control of drifting. Snow fence used to control drifting should be erected during October and November and taken down and properly stored during March and April. A log of snow fence locations, showing the beginning of each run, the number of feet of fence in each run and the distance left or right of the highway, should be kept on file in the subdistrict office and revised as required.

All snow fence will be placed as designed and approved by the District Operations Section.

Good public relations with property owners on whose land fence is placed is mandatory. Obtain prior approval from the property owner for all installations on private property. Instruct crews to be careful of crops, fence, etc., in this operation.

OPERATIONS

General

1. A safe driving surface is of primary importance. The aim of snow and ice removal operations is to return the surface to normal conditions as soon as possible within the limitations of the Department Goals and Objectives. The desired results can be obtained by proper use of storm forecasts, personnel, equipment, and materials. A coordinated effort must be made between all districts and subdistricts to provide the public with on uniform driving surface.

2. Equipment

During the winter season maintenance snow and ice removal equipment should be given the highest priority.

- a. Inspection -- each time before a piece of snow and ice removal equipment is used, a routine inspection should be made to see that the piece of equipment is operating properly. Special attention should be given to all safety equipment and to the hydraulic system. Inspection should also be made after the storm and any problems reported and scheduled for early repair.
- b. Cleanup -- snow and ice removal equipment needs to be cleaned as soon as possible after each storm to remove deposits of salt and sand.
- c. Assignment of equipment -- if possible each piece of equipment should be assigned to one person. This person would be responsible for reporting all maintenance needs and for keeping the equipment clean. Inspection should be completed before use by any person operating that piece of equipment. The Unit Foreman is responsible for making sure that reported maintenance needs are performed and equipment is in good working order.

3. Materials Types & Mixtures

There are four basic materials or combinations approved for use in Indiana for different road and weather conditions, These will be referred to by type and list below.

- a. Type A- ABRASIVES. Sand, cinders, or crushed chips treated with 100 pounds of salt or 50 pounds of calcium chloride flakes or 3 gallons of liquid chloride per cubic yard. Type A can be used to provide traction when the temperature is near 0 F., or below (250 lbs. Per lane mile maximum).
- b. Type B - SALT (Sodium Chloride) Type B can be used when the temperature is above 20 F. (250 lbs. Per lane miles maximum).
- c. Type C - SALT/LIQUID CHLORIDE mixed at 75% salt and 25 % calcium chloride flakes, or approximately 8 gallons of liquid chloride per ton. Type C is for use when the temperature is between 0 degrees F. and 20 degrees F. (250 lbs. Per lane maximum).

- d. Type D - ABRASIVES/SALT abrasives salt mixture (normally 1:1), or abrasive and liquid chloride mixed at 15 gallons per ton, for use when the temperature is below 20 F. The percent of abrasive or salt in the mix should be determined by storm conditions. (250 lbs. per lane mile maximum).
- e. Type E- LIQUID MAGNESIUM CHLORIDE (Anti-icing Method). The liquid is applied directly to the pavement prior to the storm or during the storm at a rate of approximately 25 gallon per lane mile.

4. Material Applications

Snow and ice control treatments can vary considerably depending on location, temperature, precipitation, forecast, traffic, etc. Factors to consider when making decisions about material applications are outlined in the following sections.

- a. General. Materials are to be used to produce the desired pavement conditions within a reasonable period of time. Excessive applications of materials must be avoided at all times. Every effort must be made to hold the use of materials at the minimum level which will produce the desired results in the time required.

On trucks equipped with manual controls, operators should reduce the spreader setting when vehicle speeds are decreased substantially for an extended period of time.

- b. Initial Treatment. Often the most effective treatment is to apply material before there is a large accumulation on the roadway (get under the storm). The purpose is to form a layer of brine. The material should not be plowed off until the material has had time to create the brine. Factors to consider before making an initial treatment are:

- + Consideration should be given to whether anti-icing procedures have been applied.
- + If anti-icing procedures have not been used, treatment should wait until sufficient snow has accumulated so that materials will stick to the pavement. If snow is blowing off the road, no materials application is needed.

- + The forecast time and security of the storm. To get the material placed at the right time, personnel should be called out and spreading equipment should be loaded and ready to begin operations when the storm hits. When expected accumulation exceeds 1", actions should be taken immediately to get the material under the storm.
 - + The forecast temperature range during the storm. When temperatures drop below approximately 20 F, salt is not an effective treatment. Salt is more effective above 20 F. Liquid Chloride mixtures and/or abrasives are more effective below 20 F.
- c. Treatment during the storm. Treatments during the storm are controlled by existing and forecasted conditions. Specific factors that must be considered for selecting treatments during the storm are:
- + Time lapse since previous salt treatments. Chemicals require at least 45 minutes to one hour to work. Removal by plowing or a re-application of materials before they have had a chance to work result in wasted material. Normally, chemicals begin to lose effectiveness approximately 3 hours after application.
 - + Day of the week and time of the day. To the extent possible, treatments are to be made and completed immediately prior to the weekday evening rush hours and the weekday morning rush hours, particularly in urban and high traffic volume areas. Make the best use of sun, traffic and warmer daytime temperatures.
 - + Snowfall forecast for the next few hours. Application of material and/or plowings will depend upon whether expectations are for heavy accumulation (which will require formation of brine between the road surface and accumulation prior to plowing or scraping) or light accumulation (which can be removed by melting). It is uneconomical to attempt to melt heavy accumulations when plowing will remove the major accumulations prior to salt applications. During storms, when the rate accumulation approaches 1 inch per hour and heavy accumulation is anticipated, it is often desirable to concentrate on plowing and withhold material application until the rate of snowfall decreases. During such periods spot treatment with chemicals or abrasives at hazardous locations, i.e., hills, curves, ramps, etc., may be necessary to ensure continuous flow of traffic.

- + The temperature range forecast for the next few hours. As with the initial treatment, the feasibility of plowing, scraping, and/or material application will depend upon the temperature ranges in the coming 4-5 hours.

5. Guidelines for Personnel Callout

Effective and efficient snow and ice removal operations depend on the pre-storm decisions for notification and mobilization of crews and support personnel. The responsibility of calling out the right number of people at the right time is the Subdistrict Managers. The Manager is also responsible for who is called out. The Subdistrict Manager may delegate authority to call out people to the Operations Foreman and Unit Foremen.

The alternatives for crew callout are related to expected storm time and forecast severities so it is extremely important to effectively use all available weather forecast data.

- a. Forecast for ice or 1 inch or more accumulation. The callout should be for enough people to cover all roads. Loader operators, the Shop Foreman or mechanic assigned by the Shop Foreman, a parts clerk and any other support personnel required should also be called out at this time.
- b. Forecast for snow flurries, frosting, or less than one inch accumulation. Callout only the amount of people necessary to maintain the roads to the desired levels of service.
- c. Additional callout or sending people home. This is also the Subdistrict Managers responsibility, but authority may be delegate to the Operations Foreman and Unit Foremen. The duration and intensity of the storm and the conditions of the roads are the deciding factors.

6. Plowing

If an initial application of chemicals has been made, plowing operations should be delayed long enough to allow the chemicals to work; however, plowing should be done before the slush freezes on the pavement. During continuous or repeated storm conditions, plowing must be repeated as often as necessary to maintain the desired road conditions.

- a. Plowing operations on multi-lane highways should be done by plow operating in unison. This eliminates the hazard of a window of snow lying between the passing and traffic lanes. Snow plows operating in unison must be spaced a sufficient distance apart to allow for safe operation of traffic.
- b. At railroad crossing, snow and slush from the plow should be emptied along the berm in advance of the crossings to avoid carrying snow and slush onto the tracks, where it may become packed in the flangeways, creating a hazard which could derail a train. Special effort should be made to keep the crossing safe for highway and train traffic. Approaches to crossings should be treated to prevent any slippery conditions, but avoid using chemicals in the track area at railroad grade crossings.
- c. Exercise care when plowing on overhead bridges. Do not plow snow down upon railroad tracks or other highways below.
- d. During cleanup operations, windrow the snow as far back off the shoulder as practical. Snow windrowed along the high side of super-elevated curves should be shoved back into the ditch or moved to the low side of the road. These operations will provide storage space for future snows and prevent melted snow from running on the pavements and freezing.
- e. Where possible, plow with the wind.

7. Ice Control

The formation of ice on the pavement presents a far greater traffic hazard than snow, especially during its early stages (get under the ice). Treatment for hazardous ice conditions must begin immediately. Patrols and watchmen must be instructed to promptly notify supervisory personnel when ice conditions begin to develop. The use of temperature sensors will aid in determining when dangerous conditions develop.

- a. Bridges present the greater hazard since they usually ice up before the adjoining pavements. If salt or liquid chloride is used on the bridge decks for removal of ice, the resulting slush or broken ice must be removed from the bridge deck as quickly as possible. This will prevent refreezing in case of a sudden temperature drop and reduce the possibility of the brine solution damaging the structure.
- b. Critical danger spots must be identified and special arrangements made for treatment of these areas. Potential danger spots include curves, steep hills, intersections, railroad crossings, hidden drives, interchange ramps, and narrow or steep bridge approaches. Isolated slippery spots due to water running on the pavement or occasional drifts are also potential danger spots.

8. Evaluations of Snow Removal Operations

- a. The Unit Foreman responsible for specific snow routes in each subdistrict will report the results of snow removal activities to the Subdistrict Manager/Operations Foreman as required for effective evaluations.
- b. The Subdistrict Manager shall submit timely performance reports of snow activities to District Operations Engineer together with recommendations relative to modifications in operating procedures and potential equipment needs.

POST WINTER OPERATIONS

1. Equipment

It is important after the winter season to inspect and repair the snow and ice removal equipment and then store the equipment in such a manner that it will be usable the next winter season.

- a. **Inspection.** All snow and ice removal equipment should be thoroughly inspected and cleaned soon after the winter season to identify needed maintenance. This inspection should identify cleaning and painting that needs done as well as any mechanical maintenance. A schedule be developed to assure painting is accomplished in a timely manner.

- b. Cleanup. All equipment should be thoroughly cleaned to remove all deposits of salt and sand. Special care should be taken to clean salt from around lights and other electrical parts, around brakes and from around all hydraulic couplings

- c. Storage. Beds and plows should be removed and properly stored, as well as oil chains, sprockets and other parts needing oil. Make sure all ends of hydraulic hoses are covered. It is a good idea to run spreaders at least once a month applying oil and re-greasing as needed.

2. Material

Salt stored in open stockpiles should be moved to inside storage.

3. Snow Fence

All snow fence should be removed and properly stored as the weather permits. Instruct crew to be careful of cops, fences, etc., in this operation.

Approved By:

Timothy D. Bertram 8-24-98
Timothy D. Bertram, Chief Date
Operations Support Division

Well Abandonment - Oil and Gas

The procedure for well abandonment is very specific and an inspector from the Division of Oil and Gas (IDNR) **must be present** when the well is plugged. If an existing oil or gas related well is discovered during construction, INDOT or its contractor should contact the Division of Oil and Gas for details regarding abandonment requirements.

312 IAC 16-5-19 Plugging and abandoning wells

- (a) Wells shall be plugged in accordance with IC 14-37-8.
- (b) With respect to a well for oil and gas purposes, an owner or operator shall place cement plugs using the pump and plug or displacement method from the bottom to the surface or must do the following:
 - (1) Place a cement plug from:
 - (A) fifty (50) feet below an oil or natural gas formation;
 - (B) an injection zone; or
 - (C) the bottom of a hole to one hundred (100) feet above the top of the formation.
 - (2) Place a cement plug from fifty (50) feet below to one hundred (100) feet above a commercially mineable coal resource. Where a hole terminates less than fifty (50) feet below a commercially mineable coal resource, the cement plug shall commence at the bottom of the hole. A commission representative may require use of a mechanical plug, packer, or other suitable material where appropriate to securing placement of the cement plug.
 - (3) Place an appropriate mechanical plug or packer at the top of a producing formation or injection zone and set a fifty (50) foot cement plug above the mechanical plug or packer.
 - (4) Where insufficient casing was set or where surface casing was not cemented to the surface, the production string of casing shall be removed from fifty (50) feet below the deepest underground source of drinking water. The owner or operator shall place a cement plug from the remaining production string of casing to three (3) feet below the surface.
 - (5) A dry hole that does not enter a commercially mineable coal resource may be filled with mud-laden fluid, well cuttings, pea gravel, or crushed rock from the bottom of the hole to fifty (50) feet below the deepest underground source of drinking water. The owner or operator shall place a cement plug from fifty (50) feet below the deepest underground source of drinking water to three (3) feet below the surface.
- (c) Within six (6) months of abandoning a well, an owner or operator shall do the following:
 - (1) Clear the area of refuse and equipment.
 - (2) Dispose of waste fluids.
 - (3) Drain and fill excavations.
 - (4) Remove substructures.

- (5) Restore the surface as nearly as practicable to its condition prior to drilling.
- (d) The owner of surface rights may with consent of the owner or operator apply to the division to retain equipment, fixtures, or pits placed with respect to a well drilled for oil and gas purposes. The application shall be made on a departmental form releasing the owner or operator and its agents from responsibility for restoration of the well site, except as provided in the application.
- (e) An owner or operator may apply to the commission to convert a well for oil and gas purposes otherwise to be abandoned to a fresh water well. The application shall be made on a division form and shall include the following information:
- (1) The depth to which an owner or operator proposes to plug a well.
 - (2) Written consent by persons who hold a recorded interest at or above the elevation of the plug.
 - (3) A statement by the owner or owners of surface rights to release the owner or operator from an obligation to abandon the well, except as provided in the application.
- The division shall authorize the conversion to a fresh water well upon a finding that the application has been properly completed and that the conversion will not violate IC 14-37 or this article.
- (f) The use of bridges in plugging wells is prohibited. The owner or operator shall drill out and replug the hole if unfilled below the bridge.
- (g) If unauthorized material is placed in a hole, the division may require the material to be removed before plugging operations are commenced.
- (h) A permanent plugback, other than a plugback in a cased hole, shall be witnessed by a commission representative.
- (i) If a hole is obstructed by equipment associated with drilling or operating a well, and if the removal of that equipment is impracticable, the division director may authorize a special method to abandon the well. The owner or operator shall obtain approval of the special method from a commission representative before implementation.

312 IAC 16-5-20 Temporary abandonment of wells

- (a) An owner or operator may defer plugging and abandonment under IC 14-37-8-1 for a well that has been drilled, completed, and cased for production if either of the following is satisfied:
- (1) Abandonment is deferred under subsection (b).
 - (2) The requirements of subsection (c) are completed for temporary abandonment status.
- (b) An owner or operator may defer plugging and abandonment of a well for one (1) year, or for any lesser time prescribed by the division, if both of the following are satisfied:
- (1) The owner or operator notifies the division, in writing, on a form provided by the division, that plugging and abandonment are being deferred. The notification must be filed with the division within sixty (60) days of the following:
 - (A) Well completion for a well not placed in operation.
 - (B) The termination of operations for a well placed in operation.

(2) The owner or operator complies with each of the following technical requirements:

(A) The well is provided with an intact, leak-free wellhead or is capped with a valve and configured to monitor casing or casing-tubing annulus pressure.

(B) The well site is kept free of unnecessary equipment, vegetation, and debris.

(C) The excavations associated with drilling are filled and leveled.

(D) Signs are posted and maintained under section 10 of this rule.

(E) A properly executed completion or recompletion report is submitted to the division under section 17 of this rule.

(F) The well is cased and cemented under this rule.

(G) Bond is maintained on the well as required under this rule.

(H) A demonstration is made under subsection (d) that the well does not threaten an underground source of drinking water.

(c) An owner or operator of a well may seek temporary abandonment status for a well that conforms to the requirements of IC 14-37 and this rule. The owner or operator seeking temporary abandonment status must file a completed application on a division form within sixty (60) days of the following:

(1) For a well not placed in operation, the date on which drilling of the well is completed.

(2) For a well placed in operation, the date on which operation of the well is terminated.

(3) If the department has approved a deferral of plugging and abandonment under subsection (b), the date of expiration of the deferral.

(d) The following governs the demonstration required under subsection (b)(2)(H) that a well does not threaten an underground source of drinking water:

(1) The owner or operator must notify an inspector at least forty-eight (48) hours before a demonstration is to be performed.

(2) The owner or operator must use one (1) of the following methods in performing the demonstration:

(A) Monitor the fluid level using acoustical or wire line measuring methods on an annual basis and report the results of monitoring on a form prescribed by the division. If the fluid level is closer than one hundred (100) feet to the base of the lowest underground source of drinking water, the owner or operator shall notify an inspector within twenty-four (24) hours and shall do one (1) of the following:

(i) Plug and abandon the well under section 19 of this rule.

(ii) Set a mechanical bridge, cement, or calseal plug within two hundred (200) feet above the perforated or open hole interval in the cemented portion of the casing, but no less than one hundred (100) feet below the base of the lowest underground source of drinking water. Remove any fluid to a level at least one hundred (100) feet below the base of the lowest underground source of drinking water.

(iii) Set a mechanical bridge, cement, or calseal plug within two hundred (200) feet above the perforated or open hole interval in the cemented portion of the casing, but no less than one hundred (100) feet below the base of the lowest underground source of drinking water. Pressure test the casing at least once every five (5) years during any period of temporary abandonment by filling the casing above the mechanical bridge, cement, or calseal plug with water and placing a pressure of at least three hundred (300) pounds per square inch gauge (which may vary no more than three percent (3%)) for a period of thirty (30) minutes. During the thirty (30) minute period of the test, additional pressure may not be applied to the casing.

(iv) Install tubing and packer within two hundred (200) feet above the perforated or open hole interval in cemented portion of the casing, but no less than one hundred (100) feet below the base of the lowest underground source of drinking water. Pressure test the casing tubing annulus at least once every five (5) years during any period of temporary abandonment by filling the annulus above the packer with water and placing a pressure of at least three hundred (300) pounds per square inch gauge (which may vary no more than three percent (3%)) for a period of thirty (30) minutes. During the thirty (30) minute period of the test, additional pressure may not be applied to the annulus.

(v) If a bridge, cement, or calseal plug was lawfully set before the effective date of this section, which is one hundred (100) feet below the base of the lowest underground source of drinking water, but no less than one hundred (100) feet below the calculated top of the cement, fluid level monitoring as described in item (iii) or a pressure test as described in item (iv) may be used to demonstrate the well does not threaten an underground source of drinking water.

(B) Perform a mechanical integrity test as described in clause (A)(ii), (A)(iii), or (A)(iv).

(C) For a gas well, with a minimum wellhead pressure of one hundred (100) pounds per square inch, each of the following standards apply:

(i) At least ten percent (10%) of the initial shut-in pressure shall be bled off, and the well shall be shut back in under the supervision of an inspector.

(ii) Once the well returns to the maximum shut-in pressure, the pressure must be maintained at a constant level for thirty (30) minutes in the presence of an inspector.

(iii) A pressure measuring device displaying a readout of the shut-in pressure shall be attached to the wellhead and shall be accessible at all times for inspection by the inspector.

(e) Temporary abandonment status may be granted for a period not to exceed five (5) consecutive years.

(f) Upon the expiration of temporary abandonment status or its renewal, the owner or operator must do one (1) of the following:

(1) Operate the well for its permitted purpose.

(2) Plug and abandon the well under section 19 of this rule.

(3) Submit a request for temporary abandonment renewal, on a form prescribed by the division, which demonstrates that the engineering, geologic, or economic reasons for retaining a well on temporary abandonment status outweigh the potential benefit from operating, plugging, or abandoning the well. Demonstrate the well does not threaten an underground source of drinking water by using a method, as selected by the division, under subsection (d)(2)(A)(ii), (d)(2)(A)(iii), or (d)(2)(A)(iv).

(g) If an owner or operator fails to file an annual report, as required under subsection (d)(2)(A), the division may require the owner or operator to do any of the following:

(1) Demonstrate the well has mechanical integrity using a method selected by the division under subsection (d)(2)(A)(ii), (d)(2)(A)(iii), or (d)(2)(A)(iv).

(2) Operate the well for the permitted purpose.

(3) Plug and abandon the well under section 19 of this rule.

(h) An owner or operator must notify the division in writing within thirty (30) days of any change in the operational status of a well that has been granted temporary abandonment status under this section.

(i) Operation of a well that is subject to this section removes the well from temporary abandonment status.

Well Abandonment - Water

It is not uncommon to see an older farmstead or other residence with a hand pump or a dug well covered over with rotting boards. These types of situations are a threat to human safety as well as potential sources of ground water contamination. The water well drilling law requires that these abandoned wells must now be sealed with either a threaded or welded cap over the casing or by filling the well casing with impermeable material. The procedure for well abandonment is very specific and should not be attempted without consulting the Division of Operations Support for complete instructions. In addition, the **DNR, Division of Water, shall be notified in writing of abandonment within thirty days after plugging is completed.**

The Landowner Responsibility for Abandonment and Plugging of Wells rule defines the term "water well driller" as "a person who operates well drilling or driving equipment or engages in the drilling or driving of wells". It further defines "well" as "a hole drilled or driven to:

1. obtain geologic information on aquifers;
2. monitor the quality or quantity of ground water;
3. obtain ground water; or
4. utilize the geothermal properties of earth formations.

312 IAC 13-10-1 Temporary Abandonment of Wells

A well which has not been used for more than three (3) months without being permanently abandoned must be sealed at or above the ground surface by a welded, threaded, or mechanically attached watertight cap. The well shall be maintained so that the well does not become a source or channel of ground water contamination.

312 IAC 13-10-2 Permanent Abandonment of Wells

(a) A well abandoned before January 1, 1988, must be sealed at or above the ground surface by a welded, threaded, or mechanically attached watertight cap. The well shall be maintained so the well does not become a source or channel of ground water contamination. A well that poses a hazard to human health must also be plugged under subsection (c). A cased or uncased bucket well or a hand dug well (other than buried slab construction) that was abandoned before January 1, 1988, shall be closed in conformance with one (1) of the following procedures:

- (1) Covered with a reinforced concrete slab at least four (4) inches thick and having a diameter larger than the nominal diameter of the borehole or the well casing.
- (2) Equipped with a properly reinforced cover constructed of pressure treated lumber, using chromium copper arsenic salt, that has dimensions larger than the nominal diameter of the borehole or well casing. The cover shall be protected against the water with roofing or other water repelling materials that are properly maintained to ensure the integrity of the cover. Closure shall not be performed under this subdivision, however, if the cover is in direct contact with ground water or surface water.
- (3) Closed as otherwise approved by the division.

(b) A well drilled before January 1, 1988, and abandoned before January 1, 1994, shall be sealed at or above the ground surface by a welded, threaded, or mechanically attached

watertight cap. The well shall be maintained so the well does not become a source or channel of ground water contamination. A well that poses a hazard to human health must also be plugged under subsection (c).

(c) A well abandoned after December 31, 1987, shall be plugged with an impervious grouting material to prevent the migration of materials or fluids in the well and the loss of pressure in a confined aquifer.

(d) A well drilled after December 31, 1987, and not equipped with casing must be plugged within seventy-two (72) hours after completion.

(e) This subsection applies as follows to a cased or uncased well abandoned after December 31, 1987:

(1) The plugging material must consist of one (1) or a combination of the following:

(A) Neat cement with not more than five percent (5%) by weight of bentonite additive.

(B) Bentonite slurry (which can include polymers designed to retard swelling).

(C) Pelletized, medium grade, or coarse grade crushed bentonite.

(D) Other materials approved by the commission.

(2) The following methods apply:

(A) Cement and bentonite slurries shall be pumped into place in a continuous operation with a grout pipe introducing the plugging material at the bottom of the well and moving the pipe progressively upward as the well is filled.

(B) Plugging materials other than neat cement or bentonite slurry shall be installed in a manner to prevent bridging of the well or borehole. The well or borehole shall be measured periodically throughout the plugging process to ensure that bridging does not occur.

(3) The following procedures apply:

(A) An abandoned well shall be disconnected from the water system. Any substance that may interfere with plugging shall be removed, if practicable.

(B) A well (other than a monitoring well, a dewatering well, or an uncased borehole) shall be chlorinated before abandonment as provided in 312 IAC 13-9-1.

(4) A cased well shall be plugged as follows:

(A) With neat cement, bentonite slurry, or medium grade or coarse grade crushed or pelletized bentonite from the bottom of the well to within two (2) feet below the ground surface unless otherwise provided by the department.

(B) The well casing shall be severed at least two (2) feet below the ground surface, and a cement plug larger in diameter than the borehole shall be constructed over the borehole and covered with natural clay material to the ground surface.

(5) An uncased well (other than a borehole drilled by a bucket rig or a dewatering well governed by subdivision (8) or (9)), shall be filled with natural clay materials, neat cement, bentonite slurry, or medium grade or coarse grade crushed or pelletized bentonite from the bottom of the borehole to a depth of no less than twenty-five (25) feet below ground surface. The borehole shall be filled with neat cement or medium grade or coarse grade crushed or pelletized bentonite from a depth no less than twenty-five (25) feet below ground surface to within two (2) feet below ground surface. The remaining borehole shall be filled with natural clay material to ground surface.

(6) A cased or uncased monitoring well shall be plugged from the bottom of the well or borehole to the ground surface with a bentonite slurry or pelletized or coarse grade crushed bentonite.

(7) A bucket well shall be plugged as follows:

(A) A bucket well installed as buried slab construction shall be filled with gravel from the bottom of the well to within ten (10) feet below the ground surface. Neat cement, bentonite slurry, or pelletized, medium grade, or coarse grade crushed bentonite shall be installed in the casing or well pipe from no less than ten (10) feet below the ground surface to within two (2) feet below the ground surface. The well pipe shall be severed at least two (2) feet below the ground surface and covered with a cement plug larger in diameter than the well pipe. The remaining hole shall be filled with natural clay material to the ground surface.

(B) Bucket well construction using casing with an inside diameter of less than twelve (12) inches extending the entire length of the borehole and equipped with a well screen shall be abandoned under subdivision (4)(A).

(C) An uncased borehole drilled by a bucket rig shall be filled with natural clay material from the bottom of the hole to the ground surface. The clay material shall be thoroughly tamped to minimize settling.

(D) For other than buried slab construction, a bucket well shall be filled with gravel from the bottom of the well to at least five (5) feet below ground surface. The top section of the concrete or tile well casing shall be removed to cause the top of the well to terminate below ground surface. The well shall be filled with at least one (1) foot of neat cement, bentonite slurry, or pelletized, medium grade, or coarse grade crushed bentonite from at least five (5) feet below ground surface to the top of the well casing. The well casing shall be covered with a cement plug larger in diameter than the borehole. The remaining hole shall be filled with natural clay material to ground surface.

(8) If a dewatering well casing is removed following use, the remaining borehole shall initially be filled with granular, pelletized, medium grade, or coarse grade crushed bentonite a minimum of one (1) foot thick. The remainder of the borehole shall be filled with natural earth materials obtained during the drilling process to the ground surface and be thoroughly tamped to minimize settling.

(9) If a dewatering well casing is removed following use and the well site will be excavated as part of the construction project, the remaining borehole shall be filled with natural earth materials obtained during the drilling process to the ground surface and be thoroughly tamped to minimize settling.

(f) The division shall be notified in writing of a well abandonment within thirty (30) days after plugging is completed.

312 IAC 13-9-1 Disinfection Procedures for Drilled Wells

(a) Except as provided in subsection (d), the following procedures shall be used for the disinfection of drilled wells:

- (1) The amount of water in the well shall be determined by multiplying the gallons per foot by the number of feet of water in the well according to the following table:

Diameter of Well in Inches	Gallons Per Foot
2	.16
3	.37
4	.65
5	1.00
6	1.50
8	2.60
10	4.10
12	6.00

- (2) At least one hundred (100) parts per million of chlorine concentration in water are required for disinfection. For each one hundred (100) gallons of water in the well, the amount of chlorine liquid or compound shown in the following table shall be used:

Laundry Bleach (5.25% chlorine)	Hypochlorite Granules (70% chlorine)
3 cups	2 ounces

- (3) The solution prepared under subdivision (2) shall be poured into the well to ensure the casing walls are wetted before the cover, cap, or seal is installed.
- (4) Instead of the applications described in subdivisions (1) through (2), another application of chlorine may be substituted by a water well driller which results in a chlorine concentration of at least one hundred (100) parts per million.
- (b) As used in this section, one (1) cup is equivalent to an eight (8) ounce measuring cup.
- (c) As used in this section, one (1) ounce is equivalent to one (1) heaping tablespoon of granules.
- (d) This section does not apply to a monitoring well or a dewatering well.

312 IAC 13-9-2 Disinfection Procedures For Bucket Wells

The following procedures shall be used for the disinfection of bucket wells:

- (1) The amount of disinfectant required is determined primarily by the amount of water in the well. The following table establishes the amount of chlorine to use for each foot of water in the well:

Diameter of well (ft)	3	4	5	6	7	8	10
Amount of 5.25%	1.5	3	4.5	6	9	12	18

laundry bleach to use per foot of water (in cups)							
Amount of 70% hypochlorite (in cups)	1	2	3	4	6	8	12

- (2) To determine the amount of bleach, multiply the amount of disinfectant indicated as determined by the diameter of the well times the number of feet of water in the well.
- (3) The amount of bleach determined under subdivision (2) shall be added to approximately ten (10) gallons of water and splashed around the lining or wall of the well. The entire amount of disinfectant must be circulated so that the solution contacts all parts of the well.
- (4) The top of the well must be sealed.
- (5) Instead of the applications described in this section, another application of chlorine may be substituted which results in a chlorine concentration of one hundred (100) parts per million.