

1 **DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT**

2
3 **Solid and Hazardous Waste Commission**

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5 **Hazardous Materials and Waste Management Division**

6
7 **6 CCR 1007-2**

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9 **STATEMENT OF BASIS AND PURPOSE**
10 **AND SPECIFIC STATUTORY AUTHORITY FOR**

11
12 **Revision to Regulations Pertaining to Solid Waste Sites and Facilities (6 CCR 1007-2, Part**
13 **1) –Deletion and Replacement of Existing Section 5.5 Regulations (Management of**
14 **Asbestos-Contaminated Soil) with New Section 5.5 Regulations (Management of Regulated**
15 **Asbestos Contaminated Soil (RACS)); the Addition of Appendix 5A (Sample Collection**
16 **Protocols and Analytical Methodologies) and the Associated Additions and Revisions to**
17 **Section 1.2 Definitions**

18
19 **Basis and Purpose**

20 **I. Background**

21 The State Board of Health¹ promulgated a revision to Section 5 of the Solid Waste Regulations
22 in 2006 in order to address asbestos contamination in the soil. The Air Quality Control
23 Commission has promulgated Regulation No. 8, The Control of Hazardous Air Pollutants, Part
24 B, The Control of Asbestos (Regulation No. 8), in order to protect public health and the
25 environment during asbestos abatement and control projects dealing with facility components.
26 Regulation No. 8 deals with Asbestos Containing Material (ACM)² which is defined as
27 containing greater than 1% asbestos. One of the reasons for the promulgation of the revision to
28 Section 5 of the Solid Waste Regulations was to address sites with soil contaminated with
29 asbestos at levels that are less than 1%, and where the asbestos contamination is not related to the
30 presence of a facility component, and thus not specifically regulated under Regulation No. 8.

31 In 2004, the Environmental Protection Agency (EPA) Office of Solid Waste and Emergency
32 Response (OSWER) issued a directive stating that disturbance of materials that contain less than
33 1% asbestos can result in concentrations of airborne asbestos above acceptable exposure criteria.
34 The OSWER directive clarified that the 1% threshold for ACM is not health based. Rather, the
35 1% threshold was established in the 1973 National Emissions Standards for Hazardous Air
36 Pollutants (NESHAPS), where the intent of the threshold was to ban the use of materials that
37 contain significant quantities of asbestos, but to allow the use of materials with small quantities
38 of asbestos (less than 1%) used to enhance the materials effectiveness. All subsequent EPA
39 regulations included the 1% threshold, and the 1990 NESHAP revisions retained the 1%
40 threshold stating that it was related to the detection limits of the phase contrast microscopy
41 (PCM) analytical method. The OSWER directive recommends that EPA Regions develop risk-
42 based, site-specific action levels to determine if EPA response actions are necessary when

¹ The Board of Health previously had authority to promulgate rules for solid waste disposal sites and facilities. This authority was transferred to the Solid and Hazardous Waste Commission in July of 2006.

² Asbestos Containing Material (ACM) is an existing term defined in Federal regulation (40 CFR 61 Subpart M) and State regulation (5 CCR 1001-10, Part B, and Section 1.2 of the Solid Waste Regulations 6 CCR 1007-2, Part 1).

43 materials with less than 1% asbestos are found at a site. The OSWER directive is supported by
44 research conducted by EPA and others, which demonstrates that high airborne fiber
45 concentrations can be generated during disturbance of soil/debris with less than 1% asbestos,
46 even with 0.001% asbestos.

47 Both the current Section 5.5 and the proposed revisions regulate asbestos, a known carcinogen.
48 Disturbance of asbestos contaminated soil releases previously static asbestos fibers into the air.
49 This release of asbestos fibers into the air, where they can be inhaled, is a public health risk. In
50 fact, the risk from the inhalation of asbestos fibers is known to be greater today than when the
51 existing regulations were passed in 2006. More recent studies indicate that the inhalation of
52 asbestos fibers cause more types of illness and more severe illness than was understood in 2006.
53 Additional information in the recent developments in asbestos related disease can be found in the
54 Division's pre-hearing statement.

55 Section 5.5 of the Solid Waste Regulations (Section 5.5) and Regulation No. 8 were drafted for
56 different applications, and therefore require different approaches to successfully mitigate
57 asbestos hazards and protect human health and the environment. Regulation No. 8 addresses
58 removal of ACM on facility components where the concentration of asbestos is greater than 1%
59 of the material in question. Abatement conducted under Regulation No. 8 involves the
60 disturbance of ACM within a negative pressure containment and utilizes air monitoring to
61 "clear" this containment prior to re-occupancy by the public. The typical site regulated under
62 Section 5.5 contains many of the exact same materials that are currently required to be removed
63 prior to demolition under Regulation No. 8. Under Regulation No. 8 these materials are removed,
64 contained, transported and disposed in a manner that is protective of both the workers and the
65 public. Section 5.5 projects typically contain broken and crumbled pieces of asbestos containing
66 material that are known to release asbestos fibers during demolition activities. Materials in the
67 ground that are already broken and crumbled are likely to have already released asbestos fibers
68 into the surrounding soils. Asbestos containing materials that are likely to release fibers must be
69 managed properly to prevent the release of fibers and the resulting unacceptable exposure to the
70 public through the inhalation of asbestos fibers. This is the very reason that the Board of Health
71 promulgated the existing regulation. Section 5.5 is intended to protect public health outside of
72 the regulated work area (RWA) from a known carcinogen, asbestos fibers.

73 When developing Section 5.5 the Division evaluated the OSWER directive and research which
74 demonstrated that a health-based threshold for asbestos in soil cannot be established without
75 conducting a site-specific risk assessment. Therefore, Section 5.5 addresses the management of
76 asbestos contamination independent of concentration, and establishes a risk management
77 approach aimed at limiting the potential for airborne exposure through engineering controls.
78 Management of asbestos-contaminated soil (ACS) conducted under Section 5.5 involves
79 disturbance of asbestos in an outdoor open air environment without containment. Air monitoring
80 is used in Section 5.5 to verify the effectiveness of the engineering controls being employed at
81 the site during soil disturbing activities. In contrast, air monitoring is utilized in Regulation No.
82 8 to determine clearance of a containment, for the purposes of re-occupancy.

83 Regulation No. 8 allows some types of ACM to remain in a building during demolition. Any
84 debris that is not removed from a site after demolition is solid waste subject to the Solid Waste
85 Regulations. Any remaining ACM and/or soil impacted by asbestos are subject to Section 5.5.
86 However, if the ACM or soil contaminated by asbestos is determined to be the result of an
87 improper demolition, the regulatory authority remains with the Air Pollution Control Division
88 (APCD) as a spill response to be conducted under Regulation No. 8. Alternatively, when

89 asbestos is present at a site without readily identifiable facility components and no improper
90 demolition can be ascertained, which is often the case with historic disposal locations, the
91 management of asbestos is conducted under Section 5.5.

92 There may be situations where abatement of a facility component subject to Regulation No. 8 is
93 co-located in an area of ACS (not associated with a facility component) subject to Section 5.5.
94 In these instances, both Regulations could apply concurrently or individually.

95 III. Statutory Authority

96 These proposed modifications are made pursuant to the authority granted to the Solid and
97 Hazardous Waste Commission in Section 30-20-109 C.R.S.

98 The specific authority for these rules is provided in Section 30-20-109, C.R.S. (“The solid and
99 hazardous waste commission shall promulgate rules and regulations for the engineering design
100 and operation of solid waste disposal sites and facilities . . .”); and Section 25-15-302(4.5),
101 C.R.S. (“the commission shall adopt rules concerning solid waste disposal sites and facilities in
102 accordance with part 1 of article 20 of title 30, C.R.S.). Section 5.5 of the Regulations Pertaining
103 to Solid Waste Sites and Facilities, 6 CCR 1007-2, Part1 (Solid Waste Regulations) applies to
104 solid waste disposal sites and facilities where soil disturbing activities expose: 1) debris as
105 defined in Section 1.2 of the Solid Waste Regulations, or 2) disturbs or exposes RACS, including
106 soil or ash known to contain asbestos fibers through documented evidence.

107 Section 30-20-101, C.R.S. defines solid waste as “any garbage, refuse, sludge from a waste
108 treatment plant, water supply treatment plant, or air pollution control facility, and other discarded
109 material, including solid, liquid, semisolid, or contained gaseous material resulting from
110 industrial or commercial operations or from community activities.” Solid waste disposal is
111 defined as “the storage, treatment, utilization, processing, or final disposal of solid wastes” and
112 solid waste disposal site and facility is defined as “the location and facility at which the deposit
113 and the final treatment of solid wastes occur.” The proposed definition of “debris” is a subset of
114 solid waste subject to the Solid Waste Regulations, and properties where debris is present are
115 solid waste disposal sites. ACM that has been discarded or disposed is debris, and is specifically
116 defined in the Solid Waste Regulations as asbestos waste, meaning “any asbestos-containing
117 material whether it contains friable or non-friable asbestos, that is not intended for further use.”
118 Therefore, all debris, including all ACM debris, is subject to the broad requirements of the Solid
119 Waste Regulations. Section 5.5 establishes additional requirements that apply only to the subset
120 of solid waste that includes asbestos or ACM debris in soil, defined as ACS.

121 II. Purpose of Revising the Regulations

122 The primary purpose of Section 5.5, and its associated definitions, is to prevent exposure to
123 asbestos fibers resulting from disturbance of ACS. The purpose of the Section 5.5 revision is to
124 update the ACS regulations based on the Hazardous Material and Waste Management Division’s
125 (the Division’s) and stakeholders’ experience gained from implementing the regulation since its
126 promulgation in 2006. Consistent with the initial regulatory process, the Division confirmed: 1)
127 the risk associated with ACS is from the inhalation of airborne fibers, and 2) it is virtually
128 impossible to correlate the concentration of asbestos in the soil with the measured concentration
129 of asbestos fibers in air. In addition, the Division and stakeholders learned that it is virtually
130 impossible to control every fiber all the time to completely eliminate potential exposures.
131 However, practical and implementable engineering controls, if applied properly, can be effective
132 in controlling the release of asbestos fibers. Therefore, the proposed revisions to Section 5.5 and

133 the associated definitions are aimed at improving the management of ACS, while maintaining
134 protectiveness of human health and the environment.

135 The Division and stakeholders have learned several lessons through the implementation of
136 Section 5.5. Key among the lessons learned is that the engineering controls used by owners and
137 operators, if applied properly, can be effective at controlling potential asbestos emissions
138 generated by soil disturbing activities at sites with ACS. Since the primary risk associated with
139 asbestos is from the inhalation of asbestos fibers, then engineering controls that successfully
140 control or eliminate emissions of those fibers will protect human health and the environment.
141 This information led to the development of a best management practices (BMP) approach to
142 managing sites with ACS. The resulting BMPs established the minimum requirements necessary
143 for proper management of ACS; therefore, the Division and the majority of stakeholders agreed
144 that the BMPs should become minimum requirements under Section 5.5. At the request of the
145 City and County of Denver (CCOD), the term “minimum requirements” was subsequently
146 changed to “standard requirements.” The standard requirements: 1) eliminate the requirement for
147 a work plan to be submitted by providing an immediately implementable work plan; 2) eliminate
148 the time and cost associated with Division review of work plans; 3) expedite project
149 implementation; and 4) provide a predictable framework for developing and implementing site
150 specific work plans.

151 Alternately, the proposed regulations also include a risk based project management approach for
152 facilities that wish to choose this approach. The risk based approach is predicated on managing a
153 project so receptors at the point of exposure are not exposed to a concentration of airborne
154 asbestos fibers greater than 1×10^{-6} for a given project scenario. In addition, the proposed
155 regulations include both default risk based concentrations and a process for owners and operators
156 to develop project specific risk based concentrations.

157 **Discussion of Regulatory Proposal**

158 I. New and Modified Definitions

159 The proposed Section 5.5 regulations require new definitions and the modification of some
160 existing definitions. These changes summarized below will be incorporated into Section 1.2 of
161 the Solid Waste Regulations (6 CCR 1007-2, Part 1).

162 The following definitions are being added to Section 1.2:

- 163 1. Adjacent Receptor Zone
- 164 2. Air Monitoring Specialist (AMS)
- 165 3. Ancillary Worker
- 166 4. Area of Contamination (AOC)
- 167 5. Certified Asbestos Building Inspector (CABI)
- 168 6. Debris
- 169 7. Friable asbestos-containing material (Friable ACM)
- 170 8. Geofabric
- 171 9. Low Emissions Methods
- 172 10. Non-Regulated Asbestos Contaminated Soil (Non-RACS)
- 173 11. Project
- 174 12. Project Specific RACS Management Plan (PSRMP)
- 175 13. Qualified Project Monitor (QPM)
- 176 14. RACS Determination

- 177 15. Regulated Asbestos Contaminated Soil (RACS)
- 178 16. Regulated Work Area (RWA)
- 179 17. Risk-Based Air Threshold
- 180 18. Staging
- 181 19. Standard Operating Procedure (SOP)
- 182 20. Stockpiling
- 183 21. Storage
- 184 22. Visible
- 185 23. Visual Inspection

186

187 The following definitions are being modified in Section 1.2:

188

- 189 1. Adequately wet
- 190 2. Asbestos
- 191 3. Asbestos-containing Material (ACM)
- 192 4. Asbestos-contaminated Soil (deleted and replaced with RACS)
- 193 5. Friable asbestos waste
- 194 6. Mechanical
- 195 7. Soil-disturbing activities
- 196 8. Visible emissions

197

198 II. Scope and Applicability

199 Although the proposed regulations were drafted using the framework and construct of the
200 original regulations, there are significant changes to the scope of Section 5.5 and to management
201 options used at sites with ACS. Section 5.5 currently applies to owners or operators of properties
202 where ACS is disturbed; where ACS is defined as soil containing any amount of asbestos, and
203 the trigger into the regulation is knowledge, or reason to know/believe, of ACS to be disturbed.
204 The proposed revisions to Section 5.5 replace ACS with regulated asbestos contaminated soil
205 (RACS)³; where RACS is determined based on the probability for ACM to release asbestos
206 fibers. Further, the proposed revisions to Section 5.5 remove the “reason to know/believe”
207 trigger, and replace it with a requirement that a person who disturbs or exposes RACS must
208 either manage it in a protective manner, or cover it to eliminate exposure. The proposed Section
209 5.5 has two primary applicability triggers, debris and RACS. The owner/operator may choose to
210 use the debris trigger prior to RACS being identified in order to reduce costs through a reduction
211 in the amount of time a Certified Asbestos Building Inspector (CABI) must be onsite. If the
212 debris trigger is used, a person who disturbs or exposes debris must make a RACS
213 determination. Both the debris and RACS triggers require that all RACS that is disturbed or
214 exposed be managed or covered in accordance with Section 5.5. The tiered applicability trigger
215 contained in Section 5.5.1 was developed at the stakeholders’ request to allow for different
216 project and liability management approaches.

217 The proposed revisions to Section 5.5 retain the standard operating procedures (SOPs) and pre-
218 approved work plan options, and establish new standard requirements (Section 5.5.7) that can be
219 implemented in lieu of a work plan or SOP, thus eliminating the need for plan submittal. If

³ The term “asbestos-contaminated soil” (ACS) in the current regulation has been replaced with the term “regulated asbestos contaminated soil” (RACS) in the revisions to Section 5.5. Therefore, in this Statement of Basis and Purpose, the term ACS is used when discussing past or current issues and requirements, while the term RACS is used when discussing future requirements under the proposed revisions.

220 owners or operators wish to propose work practices that deviate from the standard requirements
221 set forth in Section 5.5.7, they may submit the proposed work practices in a work plan or SOP
222 for Division consideration. Alternatively, a waiver from one or more of the requirements set
223 forth in Section 5.5 may be requested following the Waiver Process and Procedures set forth in
224 Section 1.5 of the regulations.

225 The revisions to Section 5.5 retain the current exemptions for: 1) asbestos abatement conducted
226 under Regulation No. 8; 2) spill response conducted under Regulation No. 8; 3) ambient
227 occurrences of asbestos (i.e., background); and 4) de minimis projects involving less than 1 cubic
228 yard of RACS disturbance using low emissions methods. The existing exemption for projects
229 conducted by a home owner on their primary residence was expanded to include any residence
230 not used to generate income. An exemption for Non-RACS has been added to Section 5.5, for
231 ACM that does not have the propensity to release asbestos fibers; however, Non-RACS must be
232 disposed of as non-friable asbestos waste, in accordance with Section 5.2, and must be addressed
233 during a remediation project where the owner/operator is seeking a No Further Action or No
234 Action Determination. In addition to the exemption for Non-RACS, the applicability of Section
235 5.5 was changed from material that contains any amount of asbestos to ACM, which is material
236 that contains greater than 1% asbestos. Therefore, materials that contain less than 1% asbestos
237 are exempt from Section 5.5. The only exception to this is soil or ash with non-visible asbestos
238 based on documented evidence, due to the high potential for unacceptable exposures to asbestos
239 fibers during disturbance.

240 **Stakeholder Involvement in the Process**

241
242 The Division is proposing to revise the regulations (Section 5.5) and the definitions associated
243 with soil disturbing activities at sites with RACS. The initial stakeholder meeting was held on
244 October 5, 2011. Stakeholders were provided a draft of the proposed regulations prior to the
245 meeting. The Division determined that the stakeholders had numerous issues with the existing
246 and proposed regulations. Further, the Division determined that the stakeholders would be best
247 served by developing three stakeholder groups: 1) general stakeholder, 2) best management
248 practices and 3) risk evaluation. This approach afforded the opportunity for select stakeholders
249 with special interests and/or specialized experience to participate in the appropriate group(s).
250 This approach facilitated the independent work of the BMP group and the risk evaluation group.
251 Another benefit of this approach was to work and report on issues concurrently thereby saving
252 time and stakeholder fatigue. The following describes the Division's effort to work with and
253 reach out to stakeholders.

254 I. **Extent of Agency Consultation with Owners, Operators, Consultants, and Local Government** 255 **Representatives**

256
257 The Division utilized various methods to inform individual industry representatives, industry
258 trade associations, local government agencies, and local government agency associations of the
259 proposed regulatory revisions. These methods included:

- 260
261 1. Posting a Stakeholder Process Notification Request Form on the Division's website to
262 notify stakeholders of upcoming stakeholder meetings and related draft documents.
263
- 264 2. Providing industry representatives and local government representatives information
265 regarding stakeholder meetings and providing all draft documents and discussion
266 materials by e-mail.

- 267
268 3. All known registered owners, operators, consultants and interested parties were notified
269 by email prior to the release of the first draft of the revisions to the regulations.
270
271 4. The Division sent out stakeholder meeting email notices that included the latest draft
272 revisions to the regulations and the Statement of Basis and Purpose. The emails were
273 sent directly to local county governments and industry representatives, and also to the
274 following organizations for distribution: Colorado Counties, Inc. (CCI), Colorado
275 Municipal League (CML), and Colorado SWANA (CO SWANA). All of these
276 organizations report to local government constituents and industry representatives
277 involved in matters pertaining to solid waste.
278
279 5. The Division hosted 33 general, 9 BMP and 10 risk evaluation stakeholder meetings
280 during the twenty-two month drafting process from October 2011 to July 2013.
281 Stakeholders frequently submitted questions to the Division about the revisions
282 throughout the process. The questions received by the Division were addressed in
283 subsequent stakeholder meetings to share with the group, and also directly to the
284 stakeholder proposing the question by email, or phone conversation. Key stakeholder
285 questions and/or issues are compiled and discussed under the following section of this
286 document. Work group meetings were held to discuss specific topics such as the
287 development and evaluation of BMP and the risk evaluation process. The Division
288 used teleconferencing so absent or distant stakeholders could participate. Additionally,
289 the Division's website was utilized to post updates to the regulation revision process,
290 stakeholder comments, iterative versions of support and working documents, and audio
291 recordings of general stakeholder meetings.
292
293 6. The Division hosted four additional stakeholder meetings after the Commission
294 continued the rulemaking process to July 15, 2014 following the February 18, 2014
295 hearing. The same process outlined above was followed for the additional meetings.
296 CCOD and others provided comments during the stakeholder process. These
297 comments and letters in addition to commissioner suggestions were used to help form
298 the agenda's for the stakeholder meetings.
299

300 II. Issues Encountered During the Stakeholder Process

301
302 Stakeholders identified numerous issues associated with implementation of the existing Section
303 5.5 regulations. The following concerns and questions were raised by the stakeholder during the
304 regulatory revision and drafting process.
305

- 306 1. Stakeholders expressed concerns that the Division's inspectors regulated through
307 guidance instead of the explicit regulatory requirements. This issue was discussed at
308 length with the stakeholders. The Division explained that solid waste sites and
309 facilities have a great deal of variability. The solid waste regulations contain a
310 significant amount of flexibility in order to accommodate site specific variability and
311 unique circumstances. However, the stakeholders indicated a preference for increased
312 regulatory specificity.
313

314 The Division explained that increased regulatory specificity would result in decreased
315 regulatory flexibility. Further, the Division emphasized that one of the primary reasons

316 the regulations were successful was because of their flexibility to accommodate a wide
317 variety of sites and circumstances. Regardless, the stakeholders wanted more
318 regulatory specificity. Therefore, the Division sought to eliminate vague regulatory
319 language, thus the proposed regulations contain standard requirements that apply to all
320 sites where RACS is disturbed.

321
322 2. A few stakeholders have stated that the increased cost of implementation of the current
323 regulation (in contrast to a simple dirt work project) was disproportionate to the
324 increased level of protection for human health and the environment. There were
325 significant discussions regarding the cost of implementing the existing regulation
326 compared to excavation projects conducted prior to passage of the existing Section 5.5
327 regulations and associated definitions. The Division clearly indicated that cost
328 comparisons would be based on the costs associated with implementing the existing
329 regulations compared to the proposed regulations, not the proposed or existing
330 regulations compared to the absence of any regulations. There were also significant
331 discussions about the opportunities to save money based upon experience gained from
332 implementing the regulations over the last eight years. Stakeholders brought forward
333 three examples of costs incurred though implementation of the existing Section 5.5
334 regulations: 1) disposal, 2) oversight, and 3) air monitoring.

335
336 The primary source of increased costs associated with disposal under Section 5.5
337 activities are: 1) the cost of water to ensure that the ACS is “adequately wet”, 2) the
338 disposal cost caused by the increased water weight, 3) the cost of plastic liners used as
339 leak tight containers, 4) disposal as ACS instead of as construction demolition debris or
340 contaminated soil, and 5) the cost of transport and disposal of ACS with visible friable
341 ACM, due to the limited number of landfills permitted to accept friable asbestos. The
342 Division and stakeholders learned a lot about water application during implementation
343 of the existing Section 5.5. The definition of adequately wet in the current regulation
344 states:

345
346 **“Adequately wet”** means sufficiently mix or penetrate with liquid to completely
347 prevent the release of particulate material and fibers into the ambient air. If visible
348 emissions are observed coming from asbestos-contaminated soil or asbestos-
349 containing material, then the material has not been adequately wetted. However,
350 the absence of visible emissions is not sufficient evidence of being adequately
351 wet.

352
353 Successful implementation of this definition properly controls the release of asbestos
354 fibers from ACS. However, utilizing this definition, soil was sometimes wetted to the
355 point of becoming a slurry. In some circumstances much more water was being applied
356 than necessary to control asbestos fiber emissions. This over-wetting had several
357 negative unintended consequences: 1) liners wrapping the soil ruptured upon disposal at
358 the landfill, 2) operational difficulties at the landfills, and 3) an increase of the landfill
359 disposal fee.

360
361 The Division proposed a revised “adequately wet” definition to address overwatering
362 issues while still preventing or controlling asbestos fiber emissions:

363

364 “Adequately wet” means sufficiently wet to minimize or eliminate visible
365 emissions of dust and/or debris within the Regulated Work Area (RWA) and
366 prevent the release of visible emissions from leaving the RWA in accordance with
367 Section 5.5 of these Regulations. The observance of visible emissions, outside of
368 the RWA, of dust and/or debris is an indication that soils are not adequately wet.
369

370 Application of the revised definition of “adequately wet” should reduce the amount of
371 water applied to RACS. The associated water application practices should result in: 1)
372 improving the integrity of the liners wrapping soil during landfill disposal activities, 2)
373 reduced landfill operational issues associated with handling and managing slurry-like
374 soil, 3) reduced water purchase fees, and 4) reduced disposal costs from excess water
375 weight.
376

377 In addition, the definition uses a “visible emission” standard that can be readily
378 implemented and evaluated during field operations. While the definition is not based
379 on completely preventing all fibers from leaving the RWA, the Division’s experience is
380 that when water (or amended water⁴) is applied appropriately to ACS, visible and non-
381 visible emissions are controlled. Water (or amended water) applied in an appropriate
382 manner controls both visible and non-visible emissions.
383

384 During the additional meetings stakeholders expressed the desire to regulate the
385 management of RACS to allow visible emissions to leave the RWA but still be
386 protective of public health. Public health protection was incorporated into the proposed
387 definition of adequately wet by adding risk based threshold air monitoring as a tool to
388 determine if visible emissions leaving the RWA are at levels protective of human
389 health. The proposed definition follows:
390

391 “Adequately wet” means sufficiently wet to minimize visible emissions of dust
392 and/or debris within the regulated work area and either:
393

- 394 a. PREVENT THE RELEASE OF VISIBLE EMISSIONS FROM LEAVING THE REGULATED
395 WORK AREA (RWA), TO MINIMIZE THE RELEASE OF ASBESTOS FIBERS IN
396 ACCORDANCE WITH SECTION 5.5 OF THESE REGULATIONS; OR
397
- 398 b. DEMONSTRATE THAT ASBESTOS FIBERS ARE NOT LEAVING THE RWA ABOVE
399 RISK-BASED AIR THRESHOLDS.
400

401 THE OBSERVANCE OF VISIBLE EMISSIONS, OUTSIDE OF THE RWA, OF DUST AND/OR
402 DEBRIS MAY BE AN INDICATION THAT SOILS ARE NOT ADEQUATELY WET.
403

- 404
- 405 3. A few stakeholders expressed concern that the Division was inconsistent with other
406 State and Federal regulations by requiring management of materials that contain
407 asbestos at concentrations below 1%. However, the definition of “asbestos-containing
408 waste materials” in 40 CFR 61 Subpart M includes “regulated asbestos-containing

⁴ Due to the hydrophobic nature of some types of asbestos and associated matrices, it is often necessary to amend water with a surfactant. To address this issue, the revisions to Section 5.5 include a requirement to use amended water when disturbing friable ACM.

409 material wastes and materials contaminated with asbestos.” The Subpart M definition
 410 does not include a threshold of 1% for materials contaminated with asbestos, and
 411 therefore applies to materials contaminated with any amount of asbestos. The Subpart
 412 M definition illustrates the fact that Federal regulations include requirements for proper
 413 management of materials contaminated with less than 1% asbestos. Additionally,
 414 OSHA does not use 1% as a threshold for worker protection. OSHA requirements
 415 apply to all work involving asbestos, regardless of the concentration of the material.
 416 OSHA requires the management of asbestos materials that can generate an airborne
 417 concentration above 0.01f/cc (OSHA PEL) regardless of the concentration of asbestos
 418 in the material. Therefore, the Division’s requirement to manage materials
 419 contaminated with asbestos, even at concentrations below 1%, is consistent with other
 420 established regulations. Further, OSHA regulates work place exposures to asbestos, but
 421 does not regulate exposures to the general public. Section 5.5 is necessary to protect
 422 the public from potential exposure to asbestos fibers during the disturbance of asbestos
 423 in soil.

424

425 4. A few stakeholders suggested that the Division should only regulate soil containing
 426 friable ACM, and that all non-friable ACM should be exempt from regulation under
 427 Section 5.5. However, the Division believes that exempting all non-friable ACM from
 428 the management requirements of Section 5.5 would not be protective of public health.
 429 Because the risk associated with exposure to asbestos is due to the inhalation of
 430 asbestos fibers, it is necessary to manage asbestos in a manner that minimizes or
 431 eliminates the generation of airborne asbestos fibers. The proposed revisions to Section
 432 5.5 would apply only to RACS; where RACS determinations are based on the
 433 probability for ACM to release asbestos fibers. This determination is similar to the
 434 requirements for the management of Regulated Asbestos Containing Material (RACM)
 435 under NESHAPS and Regulation No. 8, which includes requirements for the inspection
 436 and proper management of non-friable ACMs that have a high probability to release
 437 asbestos fibers. In the proposed revisions the Division has sought to bring the
 438 regulations more closely in line with other established regulations, specifically
 439 NESHAPS and Regulation No. 8, and in doing so has provided some relief by
 440 specifically categorizing certain materials that do not have a high probability to release
 441 fibers into the proposed definition of Non-RACS. Materials that fall under the
 442 definition of Non-RACS are exempt from management under the proposed revision to
 443 Section 5.5, and only require proper disposal in accordance with the current Section 5.2
 444 of the regulations. Further, by using ACM as the basis for RACS, the Division has
 445 moved away from regulating material that contains any amount of asbestos to material
 446 that contains greater than 1% asbestos. The only exception to this is soil or ash with
 447 non-visible asbestos based on documented evidence, due to the high potential for
 448 unacceptable exposures to asbestos fibers when this material is disturbed.

449

450 Following is a comparison of materials that are RACM under NESHAPS and
 451 Regulation No. 8, and materials that would be RACS under the proposed Section 5.5:
 452

RACM under NESHAP	RACS under Proposed Section 5.5	Comparisons
1) Friable asbestos material 2) Category I non-friable	Soil, ash, or debris (plus 6 inches in all directions) containing:	1) Friable asbestos materials or previously non-friable materials that

<p>ACM that has become friable</p> <p>3) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading</p> <p>4) Category II non-friable ACM 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</p>	<p>1) Friable asbestos containing materials</p> <p>2) Asbestos containing materials that have been broken/resized/damaged, and have a high probability of becoming crumbled, pulverized, reduced to powder, or releasing fibers from the forces expected to act upon the material, as determined by a CABI in the field. The following asbestos-containing materials are RACS (included below)</p> <p>3) Soil or ash known to contain non-visible asbestos based on documented evidence</p>	<p>have been rendered friable are regulated under both constructs</p> <p>2) Asbestos containing materials, specifically non-friable materials, that either have already become, or will become damaged, crumbled, broken, and/or rendered friable are regulated under both constructs</p> <p>3) Soil or ash that is known to contain non-visible asbestos based on documented evidence would fall under material contaminated by asbestos and would be considered to be asbestos containing waste material, and thus regulated under the NESHAPS although not specifically under the umbrella of RACM. Hence, the Division included these materials in the scope of RACS. This same rationale also applies to the “plus 6 inches” of soil or other matrix that is considered RACS in the opening of the RACS definition.</p>
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The definition of RACS parallels the NESHAPS and Regulation No. 8 definitions of Regulated Asbestos Containing Material (RACM). RACM and RACS are parallel, and materials that are not RACM will not be RACS. The definition of RACS includes a list of specific materials that are considered RACS in certain instances, if they satisfy the criteria of the rebuttable presumption. These example materials were included for the purpose of clarification, were inserted based upon stakeholder requests, and were developed with stakeholder input. The Division has added a rebuttable presumption to Section 1.2 in Appendix 1 which clarifies that RACS is limited to non-friable materials that have been broken/resized/damaged, and have a high probability of becoming, crumbled, pulverized, reduced to powder, or releasing fibers from the forces expected to act upon the material, as determined by a CABI in the field. The list of materials that will automatically be considered to be RACS under the proposed revision are:

1. Asbestos cement materials
2. Plaster

- 469 3. Brittle caulking, glazing, and sealants
470 4. Powdery Concrete Masonry Unit (CMU) sealant
471 5. Powdery floor leveling compound
472 6. Drywall/wallboard and associated joint compound material
473 7. Firebrick
474 8. Deteriorated non-friable materials that are in poor condition due to weathering,
475 mechanical impact, fire damage (by evidence of ACM within an ash layer) or
476 other factors
477 9. Other material as determined by the Department, at the request of the person
478 disturbing debris, to have a high probability to release fibers
479

480 It is important to note that the materials listed above must be broken/damaged/re-
481 sized and have a high probability to release asbestos fibers in order to meet the
482 definition of RACS and therefore be regulated under the proposed Section 5.5.
483 Additionally, all of the above listed materials would fall under the definition of
484 Category II non-friable materials and would be regulated under the NESHAPS and
485 Regulation No. 8 in one of the two following ways:
486

- 487 1) Typically, these specific materials are found in a condition of being broken,
488 damaged, crumbled, resized, or pulverized from forces that have previously
489 impacted the materials (e.g., depositing and/or compacting during their
490 placement on or in the ground).
491 2) If intact, these materials would be considered to have a high probability to
492 release fibers from the forces expected to act upon them during the course of a
493 normal excavation project using heavy equipment.
494

495 The definition of RACS was further modified during the additional stakeholder
496 meetings to add specificity regarding exactly what materials were included in RACS
497 and those not included. Key stakeholder issues addressed by the revised RACS
498 definition include language specifying: 1) the “RACS determination” was defined and
499 added to Section 1.2 of the regulations, 2) the RACS determination was made by a
500 CABI in the field, 3) the RACS determination was made on exposed materials at the
501 time of soil disturbance, 4) that the materials previously identified in item “h” of the
502 RACS definition were combined with the item “5” in the proposed definition resulting
503 in the following:
504

505 Deteriorated non-friable ACM that are in poor condition resulting in a high
506 probability to release fibers due to weathering, historical mechanical impact, fire
507 damage (by evidence of ACM within an ash layer) or other factors
508

509 This last change was made because some stakeholder viewed the item “h” as a reopener
510 to include all other types of materials, which was not the original intent.
511

512 However, if the materials in the list above are intact when they are discovered, then the
513 materials may possibly be managed in a manner that will not result in the material
514 having a high probability to release fibers (e.g., careful hand removal). In situations
515 where the listed materials are intact when they are discovered, these materials would
516 not be regulated as RACS (Non-RACS). This approach, requested by stakeholders,
517 remains protective, and could be very useful for smaller more isolated accumulations of

518 ACM. During the additional meetings, the stakeholders indicated that there was some
519 confusion regarding Non-RACS materials and material characteristics, and which
520 management procedures can be used to ensure that materials remain Non-RACs.
521 Therefore the definition of Non-Regulated Asbestos Containing Soil was modified to
522 add clarity and specify that the conjunction between conditions 1 and 2 is “or” and not
523 “and” as evidently interpreted by a number of the stakeholders.

524
525 Asbestos cement materials are one subset of Category II non-friable materials that
526 deserve special attention. These materials have a high probability of releasing fibers if
527 they are impacted (broken, crumbled, pulverized) by heavy equipment removing the
528 material during the renovation or demolition of a structure, or if they will be impacted
529 during excavation. Therefore, even though asbestos cement materials are usually
530 considered to be non-friable they are still regulated under the NESHAP and Regulation
531 No. 8 as RACM due to their high probability to release fibers. It is clear under the
532 NESHAP and Regulation No. 8 that once these materials are crumbled they fall under
533 the definition of RACM as Category II non-friable asbestos. The Division has taken
534 the position that the terms crumbled and broken are synonymous when applied to
535 asbestos cement materials. The EPA has issued guidance that the broken edges of
536 asbestos cement materials are typically friable (EPA 340/1-90-018), and that the broken
537 edges should be rubbed to see if it produces powder. The generation of powder from
538 asbestos cement materials indicates that these materials are friable when broken and
539 result in their regulation under the NESHAP and Regulation No. 8 as RACM.
540 Alternatively, the Division is leaving the friability of asbestos cement materials to be
541 determined in the field by a CABI, but does consider this material to be regulated as
542 RACS independent of the CABI’s friability determination if the material is broken or
543 crumbled. The ability to manage and dispose of broken and crumbled material as non-
544 friable, rather than friable, results in significant cost savings.

545
546 Although expected to be rare occurrences, discoveries of asbestos cement materials that
547 are intact (not broken, damaged, crumbled, pulverized, or reduced to powder) and can
548 be managed without breaking, damaging, crumbling, pulverizing, or reducing the
549 material to powder would not be regulated as RACS under the proposed Section 5.5.
550 This is equivalent to the NESHAPS in which these materials may also be considered to
551 be non-RACM and managed as such.

552
553 5. Stakeholders indicated that the engineering controls used to prevent or eliminate
554 asbestos fibers releases were effective. Several stakeholders provided air monitoring
555 data from their ACS project sites. This information, along with data from other sites
556 reviewed by the Division, indicates that engineering controls, when used correctly, are
557 effective at controlling the release of asbestos fibers.

558
559 The Division and stakeholders have learned that air monitoring detections of asbestos
560 fibers are typically attributable to site management activities. For example, the
561 Division observed repeated detections at some sites following: 1) initial project start-
562 up, 2) a change in work crews, 3) a change in work practices, 4) a change in climate
563 conditions such as increased wind speed, and/or 5) a change in material type. This
564 information was considered when drafting the work practices and air monitoring
565 requirements included in the proposed revision of Section 5.5.
566

567 6. Section 5.5.7 of the existing regulations lists the requirements for the disposal of ACS
568 under three categories: 1) ACS with visible non-friable asbestos, 2) ACS with visible
569 friable asbestos, and 3) ACS with no visible asbestos. Currently, Section 5.5 requires
570 disposal of ACS with any amount of friable ACM as friable asbestos waste. This
571 requirement can result in an entire load of primarily soil, or other landfill debris, being
572 disposed of as friable asbestos waste due to the presence of a small amount of friable
573 ACM. However, when considered on a per load basis, it is unlikely that a load of ACS
574 would contain enough asbestos to exceed one percent content by weight, area or
575 volume when composited with the balance of material being managed. The Division
576 established the current disposal requirements in order to protect public health and the
577 environment during transport and disposal of ACS. After further evaluation and
578 discussion with stakeholders, the Division has determined that RACS with small
579 quantities of friable ACM can be disposed as non-friable asbestos waste. RACS being
580 disposed of as non-friable asbestos waste materials will still be transported in a leak
581 tight container, and will be managed at the landfill in a manner protective of public
582 health and the environment.

583
584 Some stakeholders expressed a preference for disposal of ACS with less than one
585 percent asbestos, per disposal load, as non-asbestos waste. However, the Division
586 recognizes the need for landfills to comply with all applicable regulations, protect the
587 general public disposing of solid waste at landfills, and ensure the protection of landfill
588 employees. Based on general stakeholder feedback and discussions with landfill
589 owners and operators, the Division determined that it is appropriate to base disposal
590 decisions on the total amount of friable ACM in a disposal load of soil. Allowing
591 disposal to be based on the total amount of friable ACM provides a balance between the
592 relief associated with the cost of disposal of friable asbestos waste, and the protection
593 of public health, while keeping the landfills in compliance with other state and federal
594 regulations. The proposed Section 5.5.7 requires that soil containing less than one
595 percent of friable ACM in a disposal load (based on visual estimation through
596 continuous inspection) be packaged in a leak tight container and disposed of in
597 accordance with Section 5.2 of the regulations. This allows for soil containing less than
598 one percent friable ACM, per disposal load, to be disposed of as non-friable asbestos
599 waste. RACS with one percent or greater friable ACM, based upon the total load, must
600 be disposed of as friable asbestos waste, in accordance with Section 5.3 of the
601 regulations. All RACS must be managed and packaged in accordance with Section 5.5,
602 including adequate wetting and disposal in a leak tight container, unless alternate
603 packaging is approved by the Division and the receiving facility.

604
605 7. Some stakeholders have suggested that the Division is regulating “every fiber,
606 everywhere, all the time,” or is using a single fiber threshold to trigger the requirements
607 of Section 5.5. In reality, the current and proposed Section 5.5 do not include a
608 threshold concentration of asbestos in soil since there are no requirements to sample or
609 otherwise characterize the amount or distribution of asbestos in soil. Additionally, the
610 Division believes that Section 5.5 provides a balanced approach to managing the
611 potential risks associated with the disturbance of ACS. The risk associated with ACS is
612 from the inhalation of airborne fibers, and it is extremely difficult to correlate the
613 concentration of asbestos in the soil to a measured concentration of asbestos fibers in
614 air. Rather than require a site-specific risk assessment be conducted at every property
615 with ACS, to determine the potential risks associated with every individual type of

616 ACS disturbance, Section 5.5 establishes risk management practices to be implemented.
617 Short of conducting work in a negative pressure containment, it is very difficult to
618 verify that all fibers released during ACS management are being controlled. Therefore,
619 the Division can not realistically regulate every fiber released when ACS is disturbed.
620 Section 5.5 establishes practical, implementable, and cost-effective engineering
621 controls to be used in an open-air environment. When applied properly, these practical
622 and implementable engineering controls are very effective in controlling or preventing
623 the release of asbestos fibers. However, the regulation is not intended to control “every
624 fiber, everywhere, all the time.”

625
626 8. The proposed revisions to Section 5.5 establish minimum requirements for air
627 monitoring during RACS disturbance. Air monitoring is conducted during RACS
628 disturbance to determine the effectiveness and/or adequacy of the engineering controls.
629 Project experience gained during implementation of the current regulation was used to
630 develop a progressive air monitoring approach based on: 1) retaining a screening level
631 of air monitoring to verify engineering control effectiveness, 2) retaining verification
632 analysis on a subset of screening samples to determine asbestos content, and 3)
633 reducing the air monitoring requirements and frequencies based on demonstrated
634 engineering control effectiveness. If air monitoring demonstrates that engineering
635 controls are not effective/adequate, the collected data is the basis for modification of
636 the engineering controls. Adjusting the engineering controls is an iterative process
637 based on air monitoring data, and not an automatic violation of the regulations. Air
638 monitoring is not intended for clearance or the evaluation of risk, unless the
639 owner/operator chooses to a risk-based threshold for adequately wet compliance.
640 Based on stakeholder discussion and consideration, it was agreed that for short duration
641 projects, air monitoring results would not be available quickly enough to make
642 decisions or modifications to engineering controls. Therefore, the Division and
643 stakeholders agreed that air monitoring would not be required for projects with a
644 duration of less than 2 days of RACS disturbance. In order to discourage potential
645 misuse of this exemption from air monitoring at short duration projects (i.e., by
646 conducting RACS disturbance projects in 2-day increments), the project location and
647 duration must be defined on the RACS project notification form.

648
649 9. Some stakeholders raised the concern that Section 5.5 has increased liability for
650 consultants conducting Phase I Environmental Site Assessments (Phase I ESA). To
651 limit their liability, some consultants are including a general statement in their Phase I
652 ESAs that there is a potential that ACS may be present on the property, even when
653 there is no documentation or other evidence suggesting the presence of ACS. This can
654 create an unfounded concern for property owners, potential purchasers and developers.

655
656 Section 5.5 does not create a duty to investigate the potential presence of ACS at a
657 property; rather, it requires proper management of ACS if exposed and disturbed.
658 Section 5.5 does not require the extent of ACS be characterized or remediated. If there
659 are no plans to disturb an area of ACS, the requirements of Section 5.5 are not
660 triggered.

661
662 The ASTM standard for Phase I ESAs and the EPA’s “Standards and Practices for All
663 Appropriate Inquiries” apply to releases and threatened releases of hazardous
664 substances, pollutants and contaminants, as defined by the Comprehensive

665 Environmental Response, Compensation, and Liability Act (CERCLA⁵). The
666 CERCLA definitions of “hazardous substance” and “pollutants or contaminants” are
667 broad, and include releases or threatened releases of asbestos (i.e., ACS) as a
668 recognized environmental condition (REC). However, it is unclear why consultants
669 would include a general statement that ACS may be present if there is no evidence to
670 support this statement. Further, since Section 5.5 does not create a duty to investigate
671 for ACS or remediate ACS, it seems unnecessary to include such a statement unless
672 there is evidence documenting the presence or potential presence of ACS. It is the role
673 of the environmental consultant to understand the scope and limitations of pertinent
674 regulations and advise their clients accordingly. It may be that outreach is needed to
675 further educate environmental consultants regarding the requirements and limitations of
676 Section 5.5. In addition, the Division is planning training and outreach once the
677 regulations are finalized in hopes that this topic can be more specifically addressed.
678

- 679 10. Stakeholders expressed concerns that the current Section 5.5 does not include clear
680 criteria for exiting the management requirements of Section 5.5. These concerns have
681 been addressed in the proposed revisions to Section 5.5. Under the proposed revision
682 to Section 5.5.1 Applicability, the initial trigger into the regulation either occurs when
683 debris is exposed or disturbed, or when RACS is exposed or disturbed. When using the
684 debris trigger, Section 5.5.1 requires that a visual assessment of the debris be made to
685 determine if RACS is present. If RACS is present, the management requirements set
686 forth in Section 5.5 apply to all RACS disturbance. If RACS is not present, the
687 management requirements of Section 5.5 do not apply. However, management of solid
688 waste still must comply with the applicable requirements of the Colorado Solid Wastes
689 Disposal Sites and Facilities Act and its implementing regulations.
690

691 The proposed revisions include procedures that allow for a project to exit out of Section
692 5.5 when soil disturbing activities no longer involve RACS. These procedures include
693 removal of RACS plus an additional amount of soil/other matrix material and visual
694 confirmation that all RACS has been removed. After RACS removal and visual
695 confirmation, if there is no independent documented evidence of the presence of non-
696 visible asbestos, then the remaining material would not be RACS and not subject to
697 Section 5.5. Soil disturbing activities may then proceed without following the
698 management requirements of Section 5.5 unless or until additional RACS is
699 encountered.
700

- 701 11. There was a discussion during the stakeholder process about the placement of Non-
702 RACS on the surface for reuse. As provided in Section 5.5.2, Non-RACS is exempt
703 from the requirements of Section 5.5, but must be disposed as non-friable asbestos
704 waste in accordance with Section 5.2. This is necessary because Non-RACS is still
705 solid waste containing ACM and is therefore asbestos waste. Onsite disposal of Non-
706 RACS must comply with the solid waste disposal requirements of the Colorado Solid
707 Wastes Disposal Sites and Facilities Act and its implementing regulations. Onsite reuse
708 of Non-RACS must comply with the Beneficial Use requirements of Section 8.6 of the
709 regulations. If Non-RACS is handled in a manner such that the material becomes
710 RACS, it must be managed in accordance with the requirements of Section 5.5.
711

⁵ 42 USC 9601

- 712 12. Some stakeholders have raised questions regarding the Division’s authority to establish
713 requirements to protect individuals not covered by the Occupational Safety and Health
714 Act of 1970 (OSHA). One specific example at issue is a truck driver who transports
715 ACS to a landfill, but is not directly involved in soil disturbing activities.

716
717 Under the Colorado Solid Wastes Disposal Sites and Facilities Act, the Division has the
718 authority to regulate the proper management of solid waste such as asbestos. Further,
719 C.R.S. § 30-20-101.5 declares that the Division shall “to protect human health and the
720 environment in a manner that... (d) protects the environmental quality of life for
721 affected residents.” Although the Occupational Safety & Health Administration
722 (OSHA)⁶ also has authority to regulate asbestos exposure in all construction work,⁷ the
723 Division’s authority is independent of OSHA.

724
725 There are many examples of differing regulations between OSHA and Federal/State
726 regulations. One example is the differing standards for indoor air contamination, such
727 as the exposure limits set for vapor intrusion.⁸ OSHA standards are generally not risk-
728 based. Instead, the General Duty Clause of OSHA 5(a)(1) states, “Each employer shall
729 furnish to each of his employees employment and a place of employment which are
730 free from recognized hazards that are causing or are likely to cause death or serious
731 physical harm to his employees.”

732
733 In the example of a truck entering the RWA, depending on the asbestos disturbance
734 occurring in the RWA, OSHA may require the truck driver to wear the appropriate
735 respiratory protection⁹ and possibly follow through with the necessary decontamination
736 procedures. Regardless, the Division has its own independent authority to regulate the
737 management of waste in order to protect the human health and environment. There are
738 numerous instances when the Solid Wastes Disposal Sites and Facilities Act and its
739 implementing regulations regulate the management of waste, which also involves
740 worker safety.

741
742 If state statutes and regulations provide authority over an issue that overlaps with
743 OSHA regulations, i.e., waste or public health, the state laws are not superseded or
744 secondary to OSHA.

745
746 The Division considers individuals that have not been informed of potential exposures,
747 have not been provided training required by OSHA, and that have not been provided
748 the appropriate PPE to be ancillary workers or members of the public. Section 5.5
749 includes a requirement that soil disturbing activities cease whenever ancillary workers
750 or members of the public enter a RWA.

- 751
752 13. Some stakeholders had concerns about the role and authority a CABI has during
753 projects conducted under Section 5.5, and requested that the Division state within the
754 regulation that CABI judgment would not be challenged by the Division. Stakeholders

⁶ 29 U.S.C. 651, *et. seq.*

⁷ 29 CFR 1926.1101(a) & 1910.12(b)

⁸ http://www.epa.gov/superfund/sites/npl/Vapor_Intrusion_FAQs_Feb2012.pdf (See pg. 31).

⁹ 29 CFR 1926.1101(e)(3) & 1101(e)(4) & 1926.1101(h)

755 also expressed a concern about Division enforcement where the CABI has performed
756 their duties with “reasonable care” and RACS was missed.

757
758 The role of a CABI on projects conducted under the current and the proposed Section
759 5.5 is to inspect for, and to identify suspect ACM, to determine the friability of
760 materials, and, in the proposed regulations, to make RACS determinations.
761 Additionally, CABIs conduct visual inspection for the purpose of determining the
762 percentage of friable ACM within a disposal load. CABIs also inspect for visual
763 clearance for the purpose of exiting management requirements under Section 5.5.
764 Additionally, CABIs collect samples of suspect-ACM, ACM, ACS, and soil to
765 determine the asbestos content of those materials.

766
767 The Division will not waive or limit its enforcement authorities. However, as long as
768 CABIs follow established regulatory requirements, industry protocol, and make all
769 reasonable efforts to conduct their duties consistent with all applicable requirements,
770 the Division typically seeks to correct identified issues within the scope of the project.

771
772 The concepts of industry protocol and reasonable care were discussed at length during
773 the additional stakeholder meetings. There currently is no “industry standard” for
774 performing the type of work identified in the proposed regulation. In fact, the proposed
775 regulations will be the criteria by which the industry standards will be developed.
776 Likewise, stakeholders informed the Division that “reasonable care was a very
777 defensible legal term. The difficulty with reasonable care is that while it may be a
778 defensible term it does not lend itself to being a field implementable term. One such
779 example is depicted below where certain stakeholders objected to the use of the term
780 “thorough” in the following paragraph which was modified as noted:

781
782 If debris is exposed that only contains metal, glass, plastic, wood, and/or bare
783 concrete with no associated material suspected of being asbestos-containing
784 material (ACM) (such as sealants, adhesives, mastics, coatings, adhered materials,
785 or resins), then Section 5.5 is not applicable. ~~The visual inspection shall be~~
786 ~~conducted in a manner sufficient to provide thorough inspection of the debris~~
787 ~~being disturbed, while maintaining the safety of the inspector.~~ The person(s)
788 conducting the visual inspection must be a Qualified Project Monitor (QPM) or a
789 Certified Asbestos Building Inspector (CABI).

790
791 In addition to the modified text the term “visual inspection” was defined and added to
792 Section 1.2

793
794 While stakeholders appreciated the legal defensibility of the term “reasonable care”,
795 they requested specific implementable regulatory language so they could determine
796 when they were in compliance or not in compliance. No one phrase was universally
797 applicable to the term reasonable care because it was used as a concept. Therefore the
798 Division worked with stakeholders to develop specific implementable regulatory
799 language in multiple situations.

800
801 In an effort to meet industry half way while not waiving the Division’s inspection and
802 enforcement authorities, the following language was developed and placed in the
803 proposed regulations.

804
805 Incidental occurrences of visible emissions leaving the RWA shall be managed by
806 evaluating site conditions and engineering controls for each occurrence of visible
807 emissions, and immediately implementing any identified engineering control
808 revisions necessary in order to prevent future occurrences of visible emissions.
809 All instances of visible emissions leaving the RWA shall be documented as
810 required in Section 5.5.7(L) of this regulation.
811

812 Although added in to address CCOD concerns about enforcement, CCOD initially
813 rejected this language. However, other stakeholders strongly supported its inclusion in
814 order to provide a defined level of enforcement discretion and relief to stakeholders.

815 The Division has also built in provisions in Section 5.5.7 for incidental discovery of
816 RACS during the management of materials initially determined not to be RACS. This
817 procedure provides for proper identification and subsequent management of incidental
818 discoveries of RACS once identified. The Division incorporated this procedure with
819 the understanding that it may be difficult to identify all RACS generated during a soil
820 disturbing project. As long as a CABI or QPM is performing their duties in a diligent
821 manner, and the RACS is properly managed once identified, the Division would
822 evaluate the facts and merits of each site and incidental occurrences of RACS in
823 determining an appropriate resolution.

824 14. Stakeholders expressed a concern that under the current regulation the boundaries of
825 the area where Section 5.5 applies is unclear. To provide clarity on this issue the
826 following terms were defined in the proposed revisions to Section 5.5:

- 827
- 828 • "Project" means any soil disturbing activity that involves RACS within a planned
829 geographic area(s) of disturbance, as defined on the "Notification of Regulated
830 Asbestos Contaminated Soil Disturbance" form for that specific management or
831 remediation scope, starting from the time of first RACS disturbance and
832 continuing through final RACS removal or stabilization and final demobilization.
833 A project may include one or more RWAs, and start dates and stabilization dates
834 for individual RWAs within a project may be different.
835
 - 836 • "Regulated work area (RWA)" as used in Section 5.5 of these regulations means
837 the portion(s) of a site at which soil disturbing activities involving RACS occur.
838

839 15. Currently, Section 5.5 is applicable based on "reason to know" or "reason to believe"
840 that ACS is present in soil being disturbed. Stakeholders expressed a concern that the
841 current language is too vague and ambiguous. Some stakeholders expressed a desire to
842 use an actual knowledge standard or a due diligence checklist specific to ACS.
843 However, based on consultation with the Attorney General's Office (AGO), the
844 Division rejected the use of an actual knowledge standard because it is legally
845 unenforceable. The use of a due diligence checklist was also determined to be
846 problematic, resulting in enforcement and interpretation issues. Further discussion
847 resulted in a consensus between the Division and majority of the stakeholders that
848 Section 5.5 applicability would be revised to require that any person that disturbs
849 debris, or encounters debris during soil disturbance, determine whether the debris

850 contains RACS. The applicability of Section 5.5 was refined again during the
851 additional stakeholder meetings. The proposed Section 5.5 now has two primary
852 applicability triggers, debris and RACS. The owner/operator may choose to use the
853 debris trigger prior to RACS being identified in order to reduce costs through a
854 reduction in the amount of time a CABI must be onsite. If the debris trigger is used, a
855 person who disturbs or exposes debris must make a RACS determination. Both the
856 debris and RACS triggers require that all RACS that is disturbed or exposed be
857 managed or covered in accordance with Section 5.5. The presence of RACS is
858 determined based on visual evidence of ACM or documented evidence of non-visible
859 asbestos in soil or ash. The use of “documented evidence” provides clarity while
860 maintaining a constructive knowledge standard.

861
862 The inclusion of “documented evidence” in Section 5.5 applicability language, and in
863 the definition of RACS, does not create a duty to sample or otherwise characterize a
864 site to determine if asbestos is present. Further, the removal of RACS (ACM plus 6
865 inches of surrounding soil) in accordance with the procedures in Section 5.5.7 (which
866 includes removal of RACS plus additional material), would not independently result in
867 there being documented evidence of non-visible asbestos in the material remaining after
868 RACS removal. If there is no independent documented evidence of the presence of
869 non-visible asbestos, then the remaining material would not be RACS and not subject
870 to Section 5.5. However, if samples are collected which demonstrate the presence of
871 asbestos, Section 5.5 would apply during disturbance of the sampled material.

- 872
873 16. Some stakeholders expressed a desire to eliminate air monitoring requirements, or only
874 require air monitoring using Phase Contrast Microscopy (PCM) analysis rather than
875 Transmission Electron Microscopy (TEM) analysis. The primary route of exposure to
876 asbestos fibers is inhalation, and because projects conducted under Section 5.5 are not
877 performed in containment, the Division believes that air monitoring is necessary as a
878 means to evaluate whether or not the work practices, including engineering controls,
879 utilized during a RACS disturbance project are effective in controlling the presence of
880 airborne asbestos. Further, in order to evaluate potential asbestos emissions, air
881 monitoring must include TEM verification on at minimum subset of samples.

882
883 PCM is a low magnification (up to 400 times magnification) optical microscopic
884 method used to distinguish fibrous material from non-fibrous material. PCM cannot
885 distinguish asbestos fibers from other types of fibers, as the optical characteristics of a
886 fiber cannot be determined. The PCM method is further limited by the fact that only
887 fibers that have diameters $>0.25\ \mu\text{m}$ can be detected. Specific method protocols
888 mandate that only fibers that are $\geq 5\ \mu\text{m}$ in length and that have aspect ratios of $\geq 3:1$ are
889 counted. Therefore, short thin fibers are not detected using PCM.

890
891 TEM is a high magnification (approximately 20,000 times magnification) electron
892 microscopic method used to detect and positively identify asbestos fibers. TEM allows
893 for the analysis of the crystalline structure of asbestos minerals through electron
894 diffraction, and the elemental composition of the asbestos mineral through energy
895 dispersive X-ray analysis; thereby allowing positive identification of asbestos fibers.

896
897 The analytical resolution of TEM is generally $0.1\ \mu\text{m}$ in width, as compared to the
898 resolution for routine PCM of $0.25\ \mu\text{m}$. Therefore, short thin fibers that are not

899 detected using PCM will be detected using TEM. In addition, fiber size distribution
900 and mineralogy data can only be obtained using TEM. TEM provides a method for
901 objective verification that work practices/engineering controls are effective in the
902 prevention of airborne asbestos fibers escaping the RWA.

903
904 A screening approach using PCM, where all samples are analyzed by PCM and a subset
905 of samples are confirmed by TEM, is a cost effective approach appropriate for
906 evaluating the effectiveness of work practices. Air sampling conducted for the purpose
907 of risk assessment or exposure evaluation would require that all samples be analyzed by
908 TEM. This approach is consistent with the current standard of practice for site
909 characterization used by EPA.

910
911 17. Stakeholders requested that air monitoring requirements include a reduced frequency of
912 TEM analysis for projects where engineering controls have been demonstrated to be
913 effective based on initial air monitoring data. Stakeholder discussions resulted in a
914 majority consensus that the frequency of TEM analysis may be reduced after five (5)
915 days of RACS disturbance with no asbestos detections demonstrating the effectiveness
916 of engineering controls/work practices. The reduced frequency of TEM analysis, from
917 daily to once every five (5) days, results in an 80% reduction in samples analyzed by
918 TEM, and the associated costs. However, daily TEM analysis must resume if asbestos
919 is detected during the period of reduced TEM analysis, as this would indicate that the
920 engineering controls/work practices are not effective in preventing asbestos fibers from
921 leaving the RWA. Daily TEM analysis must also resume if there are changes in site
922 conditions, friability of the material, or work practices. Additionally, any PCM
923 analysis indicating a heavy concentration of fibrous material (>0.01 f/cc) would
924 necessitate follow-up analysis by TEM.

925
926 18. Stakeholders requested that the Division provide clarification regarding the required
927 response to detections of asbestos in air monitoring samples (analyzed by TEM), and
928 when Division involvement is required. Discussions between the Division and
929 stakeholders resulted in a majority consensus that the Division shall be notified of all
930 asbestos detections by TEM, followed by the submission of an emissions control plan
931 evaluating the reason for the detection and actions taken to prevent future releases. If
932 there are three (3) consecutive asbestos detections or ten (10) detections in a single
933 project, consultation with the Division is required to determine if standard requirements
934 are being implemented appropriately and/or if additional controls are necessary. These
935 requirements are detailed in the minimum requirements for air monitoring in Section
936 5.5.7.

937
938 19. Stakeholders requested clarification regarding the requirements for RACS left in place.
939 The requirements for RACS left in place depend on whether RACS is being managed
940 or remediated. Management of RACS under Section 5.5 does not trigger a requirement
941 to characterize or remove all RACS; however, remaining RACS that has been exposed
942 must be stabilized and/or covered. For RACS remediation projects, where the
943 owner/operator seeks a “No Further Action” or “No Action Determination” from the
944 Division, all RACS must be removed or an environmental covenant will be required if
945 any RACS is left in place. The stabilization and cover requirements for RACS exposed
946 during management also apply to RACS exposed during remediation that will not be
947 removed.

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The owner/operator has the option to demonstrate that material left in place is not RACS. This option applies to RACS management and remediation projects. For projects involving only RACS with ACM, where there is no documented evidence of asbestos fibers in soil or ash, visual verification by a CABI would be necessary to demonstrate that no RACS remains in place. For projects where there is documented evidence of asbestos fibers in soil or ash, sampling would be required in addition to visual verification by a CABI.

20. Stakeholders requested clarification regarding the amount of material that requires management under Section 5.5. The definition of RACS includes the asbestos material plus six inches of surrounding soil or other non-asbestos material. Section 5.5.7 outlines procedures for exiting the requirements of Section 5.5 that include the removal of RACS and surrounding material. For example, hand removal of RACS includes the removal of the RACS plus six inches of surrounding material, resulting in the removal of the asbestos plus 12 inches of surrounding material. The procedures in Section 5.5.7 for removal of RACS and surrounding material replace the current Section 5.5.2(A) which provides a mechanism for soil containing only non-friable ACM to be considered non-asbestos contaminated if the non-friable ACM is removed from the soil prior to disturbance. The proposed Section 5.5.7 expands on the applicability of the procedure to all ACM, regardless of friability, allowing for removal of a “pocket” of RACS and surrounding material. After RACS removal and visual confirmation, if there is no independent documented evidence of the presence of non-visible asbestos, then the remaining material would not be RACS and not Subject to Section 5.5.
21. Stakeholders have requested clarification regarding the applicability of Section 5.5 to site characterization. Section 5.5 applies to soil disturbing activities that involve debris that is subsequently determined to be RACS. There is no exemption for soil disturbance conducted during site characterization. Section 5.5.2 does include an exemption for de minimus projects involving the disturbance of less than one cubic yard of total RACS using low emissions methods; however, the decontamination and disposal requirements of Section 5.5 must still be followed. Section 5.5 applies in its entirety to all projects involving the disturbance of RACS greater than one cubic yard, including site characterization, management, and remediation.
22. Stakeholders posed numerous questions regarding 1) reuse of ACS and 2) reuse of soil generated at ACS sites from areas where the soil is not known to be ACS. The disposal requirements of Section 5.5 were expanded to provide clear criteria for reuse and disposal. Section 5.5.8 (previously Section 5.5.7) includes criteria for reuse of RACS within the footprint of the area of concern (AOC) from which it was generated, and reuse outside the AOC, either onsite or offsite, by submitting a plan for beneficial reuse. Any plan for offsite reuse of RACS must be approved by the owner of the property where RACS is proposed for reuse. Section 5.5.8 includes minimum cover requirements for RACS reuse and may also require an environmental covenant to be placed on the property for areas where RACS is reused.

Section 5.5.8 includes a provision that soil that remains onsite after RACS removal (in accordance with the minimum requirements in Section 5.5.7) is not considered RACS

996 and may be appropriate for onsite and offsite use if it does not contain any other
997 regulated material.

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23. There were questions raised during the stakeholder process whether detections of asbestos fibers (by TEM analysis) indicate potential exposures of concern to individuals occupying homes or other structures adjacent to (within 150 feet) an area of RACS disturbance. Based on risk based exposure scenarios developed by the risk assessment work group during the stakeholder process, infrequent, short duration, and low concentration fiber releases correlate to a relatively low risk of exposure to asbestos. Although it is not possible to fully evaluate potential exposure risks without conducting a site specific risk assessment, it is reasonable to correlate frequent asbestos fiber releases, high concentration fiber releases, or extended periods of fiber release to an increased risk of exposure to asbestos. The elevated exposure risk is the basis for the requirement in Section 5.5.7 for consultation with the Division if there are three (3) consecutive asbestos detections or ten (10) detections in a single project.
24. Some stakeholders expressed concerns regarding costs associated with having a CABI onsite during soil disturbance at sites with a potential for ACM to be encountered, or at sites where debris had been encountered, but where no ACM had been encountered. Stakeholders further suggested that some tasks that have been traditionally conducted by CABIs do not require asbestos inspector training and thus could be performed by other qualified individuals. Discussions between the Division and stakeholders resulted in a majority consensus to establish a new position called a “Qualified Project Monitor” (QPM). QPMs must meet specific training and experience requirements and have the authority to make prompt decisions related to the management of materials suspected of containing asbestos. A QPM shall not perform tasks specifically required to be conducted by a CABI, such as inspection and identification of RACS, sample collection, or visual clearance, unless the QPM is also a CABI. However, after removal of RACS in accordance with Section 5.5.7, and in the absence of debris, a QPM may make a determination that RACS has been removed and the remaining material is not subject to Section 5.5. If a QPM is performing the duties of a CABI, the QPM must be independent of the general contractor, as required by Section 5.5.3(F). Any individual that meets the training and experience requirements for a QPM (Section 5.5.3(B)) and has the authority to make required decisions may perform the duties of a QPM.
25. Stakeholders requested clarification of the term “low emission methods” used in the exemption for de minimis projects. A proposed definition for this term was added to Section 1.2, which states “low emissions methods” means soil disturbing activities that will not result in visible emissions without the use of wet methods.” Examples of low emissions methods include careful hand removal, slow and controlled mechanical removal, and use of direct push drilling methods.
26. Stakeholders requested clarification regarding what constitutes an emergency under Section 5.5.4, allowing disturbance of RACS without fully complying with the minimum requirements of Section 5.5.7. Section 1.2 defines “Emergency” as “an unexpected situation or sudden occurrence of a serious and urgent nature that demands immediate action and that constitutes a threat to life or health, or that may cause major damage to property.

- 1045 27. Stakeholders requested clarification regarding the applicability of Section 5.5 to bulk
1046 materials with asbestos content less than 1% (i.e., non-ACM). The proposed definition
1047 of RACS in Section 1.2, is “soil, ash or debris containing ACM, and soil or ash known
1048 to contain non-visible asbestos based on documented evidence.” Soil, ash or debris that
1049 contains only non-ACM bulk material is not RACS, and therefore not subject to
1050 Section 5.5. However, non-ACM bulk material is solid waste subject to the disposal
1051 requirements of the Regulations.
1052
- 1053 28. Stakeholders requested the Division include a grandfather clause to allow SCMPs and
1054 SOPs that were approved under the current regulation to be used to comply with the
1055 proposed regulation. The Division has added language to Section 5.5.5 that would
1056 allow a SCMP or SOP “approved prior to the effective date of the amended regulation,
1057 and that complies with the substantive requirements of the regulation prior to
1058 amendment” to remain in effect. The Division included “that complies with the
1059 substantive requirements of the regulation prior to amendment” to address plans that
1060 may have included a one-time variance from Section 5.5 requirements, or that were
1061 subsequently determined not to comply with Section 5.5. The Division does not intend
1062 to review all existing approved plans to determine compliance with the current version
1063 of Section 5.5.
- 1064 29. Stakeholders requested clarification regarding the applicability of the covenant
1065 requirements of § 25-15-320 C.R.S. to RACS or Non-RACS left in place. Under § 25-
1066 15-320 C.R.S., an environmental covenant, or notice of environmental use restriction, is
1067 required when the Department makes a remedial decision at a remediation project that
1068 results in residual contamination that is not protective of all uses, or that incorporates an
1069 engineered structure. Projects conducted under the Voluntary Cleanup Program
1070 (VCUP) are not subject to the requirements of § 25-15-320 C.R.S. Section 5.5 does
1071 not change the applicability of § 25-15-320 C.R.S.
- 1072 30. Stakeholders requested clarification regarding the requirement in Section 5.5.1(B)(7) to
1073 retain onsite, or make available for inspection, records of RACS vs. Non-RACS
1074 determinations. Field notes documenting in-field determinations are considered
1075 records. If samples are collected to make RACS determinations, the analytical reports
1076 are also records that must be retained and made available for inspection.
- 1077 31. Some stakeholders raised an issue about including the term “minimize” in several areas
1078 of the regulation. The majority of the stakeholders requested that the language in the
1079 regulation be as specific as possible. In addition, several stakeholders requested that
1080 the Division not regulate through guidance as previously discussed. The Division has
1081 included the term “minimize” when referring to visible emissions within the RWA.
1082 This was intentionally done to allow some minimal visible emissions when RACS
1083 material was initially being managed. However, the Division disagrees with the use of
1084 “minimize” in other areas of the regulation, without specific performance criteria,
1085 because of the subjective nature of this term.
- 1086 If the Division utilized the term “minimize” it would have to require specific criteria in
1087 the Regulation or in approved plans. The specific criteria may include the
1088 establishment of a baseline and/or allowable safe conditions, measurement of deviation
1089 from the baseline/safe conditions, evaluations of the effectiveness of efforts to return to

1090 baseline/safe conditions, evaluation of additional activities and efforts that may be used
1091 to return to baseline/safe conditions.

1092 32. A few stakeholders raised the hypothetical fact pattern of a trespasser disturbing soil
1093 which uncovers asbestos or ACM. Stakeholders requested clarification regarding who
1094 would be held responsible for compliance with Section 5.5. If the trespasser is known
1095 and viable, the Division would follow its Enforcement Response Policy and require the
1096 trespasser abate any public health threats. In addition, 5.5.1(A) specifically assigns
1097 liability to “Any person who disturbs debris or exposes debris during a soil disturbing
1098 activity...” If the trespasser is unknown or unable to perform remediation, the Division
1099 would require the property owner and/or operator to abate the health threat as
1100 efficiently as possible. If the property owner and operator did not cooperate in abating
1101 the public nuisance, the Division would follow the “Solid Waste Enforcement
1102 Response Policy.” Each trespasser situation is unique and the Division’s response will
1103 be calibrated to the facts.

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1105 **Alternatives Considered and Why Rejected**

1106 Various alternatives were considered and discussed with the stakeholders. The Division
1107 considered alternatives in both Section 1.2 definitions and Section 5.5 regulatory requirements.

1108 Based on initial stakeholder requests, two alternatives evaluated were the development of a BMP
1109 approach and a risk evaluation process. Development of the BMP approach resulted in the
1110 establishment of minimum requirements necessary for proper management of asbestos-
1111 contaminated soil. Therefore, the BMP approach became the standard requirements included in
1112 Section 5.5.7. The risk assessment work group evaluated exposure scenarios and toxicity values
1113 and developed a methodology for evaluating risk. The risk assessment approach remains
1114 available under the proposed regulations. However, the majority of the stakeholders agreed that,
1115 implementation of the risk approach was determined to be costly and time consuming due to the
1116 amount of sampling and analysis that would be required. In addition, the results from the risk
1117 assessment approach would provide only a limited ability to reduce the engineering controls
1118 required under the proposed Section 5.5. In addition, including detailed requirements for the risk
1119 approach within the proposed regulation would reduce flexibility and limit the ability to
1120 incorporate evolving research and science related to asbestos-contaminated soil. During the
1121 development of the risk evaluation process, the majority of the stakeholders and the Division
1122 concluded that detailed requirements for the risk-based approach did not fit well into a regulatory
1123 framework, and would be best addressed through guidance to allow for site specific
1124 considerations.

1125 Other alternatives considered include:

1126 1. Do nothing - This alternative would result in the current Section 5.5 remaining in effect.
1127 This alternative was not acceptable to stakeholders seeking relief from existing
1128 requirements of Section 5.5. This alternative was also not acceptable to stakeholders and
1129 the Division because it would not provide the additional specificity that stakeholders
1130 were seeking. In addition, the Division wanted to address the fact that some stakeholders
1131 felt they were being regulated through guidance by providing additional specificity in the
1132 regulations.

1133

1134 2. City and County of Denver (CCOD) proposal - An alternative BMP matrix was proposed
1135 by CCOD that would establish a pick-list of controls and management practices to be
1136 chosen by the owner/operator during disturbance of ACS. The alternative BMP matrix
1137 would also allow an owner/operator to increase or decrease (“trigger up/trigger down”)
1138 the level of controls based on conditions encountered. The Division met with CCOD on
1139 several occasions in an attempt to further develop the alternate BMP matrix.
1140 Additionally, the alternate BMP matrix was presented to the larger stakeholder group.
1141 The alternative BMP matrix was ultimately rejected by the Division and the larger
1142 stakeholder group due to the following:

- 1143 a) The alternative BMP matrix lacked the specificity and clarity to be implementable or
1144 enforceable.
- 1145 b) Under the alternative BMP matrix, the requirements for proper management of ACS
1146 are at the discretion of the owner/operator, and therefore the Division would have no
1147 ability to ensure the proper management of ACS.
- 1148 c) Under the alternative BMP matrix, compliance with the BMPs is determined by self
1149 auditing rather than through independent oversight or monitoring. Therefore, short of
1150 direct Division oversight, there would be no mechanism to ensure compliance with
1151 the regulations.
- 1152 d) The alternative BMP matrix included either no air monitoring or monitoring only by
1153 PCM, which does not distinguish asbestos fibers from other fibers. Therefore, there
1154 would be no mechanism to positively determine if asbestos fibers were being released
1155 from the RWA. In addition, the response criteria in the alternate matrix would allow
1156 a substantial amount of fiber release episodes prior to any action being taken. The
1157 Division felt that a system of checks and balances including the positive identification
1158 of asbestos fibers through the use of TEM analysis should be required to demonstrate
1159 that projects operating under the regulation were utilizing the correct engineering
1160 controls and are being protective of public health.
- 1161 e) The alternative BMP matrix was presented in a manner that created an “illusion of
1162 choice” rather than accurately reflecting the stepwise process necessary to properly
1163 manage ACS. Therefore the matrix would not be easily implementable in the field,
1164 and would likely lead to improper management of ACS.
- 1165 f) The “trigger up/trigger down” provisions of the alternative BMP matrix assumes that
1166 BMPs are being properly implemented and are working as intended, and that the
1167 necessary controls are always in place. To the contrary, problems encountered during
1168 ACS management often center around improper or insufficient implementation of
1169 work practices or inadequate controls in place.
- 1170 g) The alternative BMP matrix “trigger up/trigger down” thresholds were not explicitly
1171 provided. Again, this would lead to problems with implementation and enforcement
1172 of the matrix.
- 1173 h) The alternative BMP matrix functioned as a pick-list rather than a decision matrix,
1174 and did not include all available management options that had been discussed in the
1175 larger BMP workgroup.
- 1176 i) The alternative BMP matrix was a significant departure from previous stakeholder
1177 input on BMPs. The larger stakeholder group preferred the BMP approach developed
1178 by the BMP workgroup because it was more straight forward and implementable, and
1179 reflected broad stakeholder consensus.

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1181 3. Rescind existing regulation - This alternative was proposed by a few stakeholders, but was
1182 rejected by the Division based on the evaluation of alternatives made prior to the
1183 promulgation of Section 5.5 by the Board of Health in 2006. Prior to the promulgation of
1184 Section 5.5, asbestos contaminated soil was not specifically addressed by regulations.
1185 The Division addressed the need to protect public health at asbestos contaminated
1186 properties on a case-by-case basis under other existing regulations and statutes. This
1187 resulted in a very inefficient, cumbersome, expensive, and time consuming enforcement
1188 process. A second alternative considered prior to the promulgation of Section 5.5 was to
1189 include regulation of ACS within Air Quality Control Commission Regulation No. 8.
1190 Regulation No. 8 primarily covers abatement of asbestos materials used in structures.
1191 The Division, in consultation with the Air Pollution Control Division, decided that the
1192 Solid Waste Regulations were a more appropriate location for the regulation of ACS
1193 because 1) the Division is very familiar with soil cleanups and remediation generally, and
1194 2) ACS are soils containing solid waste and management of the soils is dissimilar from
1195 normal asbestos abatement performed in/on buildings or intact underground utility
1196 structures.

1197 4. Use of a 1% asbestos threshold – A few stakeholders requested that the Division regulate
1198 only ACM and/or soil containing greater than 1% asbestos. This alternative was
1199 previously evaluated during the 2006 rule-making prior to promulgation of the current
1200 regulation by the Board of Health. This alternative was rejected both in 2006 and during
1201 the current rulemaking process because of the following:

1202
1203 The relationship between the concentrations of asbestos fibers in soil and the
1204 concentration of asbestos fibers released into the air is complex. The most critical factor
1205 in determining the level of airborne concentrations is the degree of mechanical
1206 disruption. Therefore, asbestos concentrations in air cannot be used to predict
1207 concentrations of asbestos in soil or vice-versa. Although the acceptable risk-based air
1208 concentration value, based on the USEPA Integrated Risk Information System (IRIS)
1209 cancer slope factor, is 0.000004 fibers/cc [at a risk level of 1E-06 (1 in a million)], the
1210 concentration of asbestos in soil corresponding to 0.000004 fibers/cc in air is not known
1211 at this time. However, it has been demonstrated that asbestos content as low as 0.001 %
1212 in soil can generate airborne respirable asbestos concentrations greater than 0.1 fiber/mL
1213 (0.1 fiber/cc), thus exceeding the OSHA Permissible Exposure Limit (PEL) (Addison et
1214 al., 1988).

1215
1216 The Division believes that disturbance of soil with asbestos contamination at levels less
1217 than 1% could present unacceptable risks to public. This determination is primarily
1218 based on the following evidence:

1219
1220 1) EPA OSWER Directive 9345.4-05 (EPA, 2004) which states, “Recent data from
1221 the Libby site and other sites provide evidence that soil/debris containing
1222 significantly less than 1 percent asbestos can release unacceptable air
1223 concentrations of all types of asbestos fibers (i.e., serpentine/chrysotile and
1224 amphibole/tremolite).”

1225
1226 2) Findings from several studies demonstrate the presence of a complete exposure
1227 pathway and/or the generation of airborne fibers at unacceptable levels of risk,
1228 from trace levels (i.e., less than 1%) of asbestos in soil, where there is enough

1229 activity to stir up soil and cause asbestos fibers to become airborne. As noted in
1230 examples given below:

- 1231
- 1232 • Simulated Asbestos Release In Glove – Box Experiments – “Mixtures of
1233 asbestos in dry soils with asbestos content as low as 0.001% can produce
1234 airborne respirable asbestos concentrations greater than 0.1 fiber/mL...”
1235 (Addison et al., 1988; *The Release of Disturbed Asbestos Fibers from Soil*.
1236 *IOM (Edinburgh) Report TM/88/14*).
 - 1237 • Simulated Asbestos Release In Activity-Based Personal Monitoring –
1238 Elevated levels of asbestos at 0.066 fibers/cc were observed during
1239 rototilling a garden in Libby which contained less than 1% asbestos (EPA,
1240 December 2001; Dr.Weis Memo).

1241

1242 Therefore, based on current risk information regarding asbestos, there is no known safe
1243 level of airborne asbestos. This makes establishing a concentration of asbestos in soil,
1244 which would result in an acceptable concentration of airborne asbestos, very difficult.
1245 Therefore, the Division chose to take an approach that requires proper management of
1246 soil contaminated with asbestos only if it is disturbed. The alternative to the Division’s
1247 approach is one that requires a costly and time consuming program of sampling, analysis,
1248 and risk assessment to determine a concentration of asbestos in soil that would result in
1249 an acceptable risk-based concentration of airborne asbestos if the soil were disturbed.
1250 The Division believes its approach is less burdensome and more straight-forward,
1251 particularly at sites with small amounts of asbestos where the cost of sampling, analysis,
1252 and risk assessment would likely far exceed the cost of controls that need to be put in
1253 place without conducting a risk assessment, and that would likely have to be
1254 implemented after the risk assessment is complete.

1255

1256 Neither the current nor the proposed revision to Section 5.5 include a threshold
1257 concentration of asbestos in soil or requirements to sample or otherwise characterize the
1258 amount or distribution of asbestos in soil. Further, there are no requirements in the
1259 proposed regulations to remove or remediate soil contaminated with asbestos. Rather, the
1260 regulations require proper management if soil contaminated with asbestos is disturbed.
1261 The Division chose the current regulatory approach partly because of the problems
1262 inherent in sampling and analysis of asbestos in soil. The Division believes that requiring
1263 sampling and analysis, followed by a risk assessment to determine the concentration in
1264 soil that could be handled without appropriate controls, is more burdensome than
1265 requiring proper management of soil contaminated with asbestos during disturbance.

1266

1267 Risk assessments can be conducted on a site-specific basis; however, this process can be
1268 expensive and time-consuming, and therefore may not be appropriate for many projects,
1269 especially those of limited scope, those under tight budgets, and those with short
1270 development timetables. Due to the burdensome nature of conducting risk assessments,
1271 the Division does not believe that it is appropriate to require that a risk assessment be
1272 conducted at every site with soil contaminated with asbestos. The Division believes that
1273 the chosen approach of requiring proper management of soil contaminated with asbestos,
1274 if it is disturbed, is the most efficient and cost effective for most sites.

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DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT

Solid and Hazardous Waste Commission

Hazardous Materials and Waste Management Division

6 CCR 1007-2

REGULATORY ANALYSIS

for

Proposed Amendments to Regulations Pertaining to Solid Waste Sites and Facilities (6 CCR 1007-2, Part I), Section 5.5, Management of Asbestos-Contaminated Soil, and Section 1.2, Definitions

- 1. A description of the classes of persons who will be affected by the proposed rule, including classes that will bear the costs of the proposed rule and classes that will benefit from the proposed rule.**

The proposed revisions to Section 5.5 affect entities that disturb asbestos-contaminated soil, including property owners, asbestos abatement contractors, builders/developers, construction contractors, environmental consultants, federal agencies and facilities, utility companies and contractors, local health departments, and state agencies and facilities involved in property redevelopment or construction. These entities would bear the cost of compliance with the requirements for proper management of asbestos-contaminated soil; however, it is anticipated that the proposed revisions will result in cost savings when compared to existing requirements. The Division believes the proposed revisions: a) protect public health and environment while providing relief, where possible, from existing requirements; b) establish a streamlined, straight forward approach to management of asbestos-contaminated soil; and c) clarify ambiguities in the existing regulations.

- 2. To the extent practicable, a description of the probable quantitative and qualitative impact of the proposed rule, economic or otherwise, upon affected classes of persons.**

The proposed revisions to Sections 5.5 clarify management techniques to be employed whenever asbestos-contaminated soil is disturbed. These techniques include asbestos sampling, air monitoring, emissions control, access control, equipment decontamination, and proper disposal of soil and contaminants. Each of these requirements, when

appropriately implemented, has a monetary cost that is borne by affected entities. The existing Section 5.5 already requires these measures; therefore, there are no added costs anticipated due to the proposed revisions. Instead, the proposed revisions include relief from some of the existing requirements, resulting in anticipated cost reductions. These reductions are discussed in detail in the Cost Benefit Analysis. The beneficial impacts of the rules include ensuring appropriate management of asbestos-contaminated soil and exposures to the public at sites where asbestos-contaminated soil is disturbed.

3. The probable costs to the agency and to any other agency of the implementation and enforcement of the proposed rule and any anticipated effect on state revenues.

The revisions to the existing Section 5.5 have no added costs to this agency and no other agencies should be affected. In addition, there should be no effect on state revenues.

4. A comparison of the probable costs and benefits of the proposed rule to the probable costs and benefits of inaction.

For the proposed revisions to Section 5.5, inaction would continue the *status quo*; sites where asbestos-contaminated soil is disturbed would continue to be subject to the current regulations. The proposed revisions include relief from some of the existing requirements, which are anticipated to reduce costs. A Cost Benefit Analysis (CBA) was prepared as part of this rulemaking process. The CBA presents: 1) major cost drivers in the current Section 5.5 regulations, 2) the proposed revised Section 5.5 regulations, and 3) an estimated cost differential between current and proposed regulations. The regulatory areas evaluated in the CBA include the impact of: 1) changing the definition of “adequately wet,” 2) changing the definition of “asbestos contaminated soil,” 3) changing the applicability of the regulations, 4) changing the air monitoring requirements, 5) changing the material characterization parameters for disposal at a landfill, 6) changing the material reuse options, and 7) including minimum requirements in the regulations that function as a default plan. Promulgation of the proposed revisions is expected to benefit affected entities through cost savings in the categories identified in the CBA.

5. A determination of whether there are less costly methods or less intrusive methods for achieving the purpose of the proposed rule.

The revisions to the existing Section 5.5 are the result of stakeholder requests to revisit the current regulatory requirements. The revisions include several areas of relief that are anticipated to result in cost savings, while at the same time protecting public health and the environment. The modifications included in the CBA described in #4 above indicate anticipated cost savings in each of the seven categories identified in the CBA. The Division believes there are no less costly or less intrusive methods for achieving the purpose of the proposed revisions.

6. A description of any alternative methods for achieving the purpose of the proposed rule that were seriously considered by the agency and the reasons why they were rejected in favor of the proposed rule.

At the request of stakeholders, the Division considered adding Best Management Practices (BMPs) and a risk-based approach to the existing approaches for managing asbestos-contaminated soil. As the risk-based approach was further evaluated, stakeholders and the Division agreed that the risk-based approach did not fit into a regulatory framework, and instead would be best addressed through guidance to allow for site specific considerations. A stakeholder work group was convened to draft BMPs, which addressed various aspects of asbestos-contaminated soil management. The resulting BMPs established the minimum requirements necessary for proper management of asbestos-contaminated soil; therefore, the Division and stakeholders agreed that the BMPs should become minimum requirements under Section 5.5. These minimum requirements: a) eliminate the requirement for a work plan to be submitted; b) provide an immediately implementable work plan; c) eliminate the time and cost associated with Division review of work plans; d) expedite project implementation; e) the minimum requirements provide a predictable framework for developing and implementing work plans. The Regulations also afford the opportunity for site specific work plans.

7. To the extent practicable, a quantification of the data used in the analysis; the analysis must take into account both short-term and long-term consequences.

The Division used stakeholder input, experience, and information gained through the implementation of the current Section 5.5 at a variety of sites across the State in the analysis of the proposed revisions. In addition, the Asbestos Program within the Air Pollution Control Division was consulted. The short and long term consequences of the proposed revisions are: a) maintaining protection of public health; b) continued safe management and appropriate disposal of asbestos-contaminated soil; and c) anticipated decreases in costs to affected entities for management and removal of asbestos-contaminated soil.

DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT

Solid and Hazardous Waste Commission/Hazardous Materials and Waste Management Division

6 CCR 1007-2

Cost Benefits Inputs, Assumptions, Evaluation, and Cost Differential:

Section 5.5 of the Regulations Pertaining to Solid Waste Sites and Facilities (6 CCR 1007-2, Part 1; Regulations) was promulgated in 2006. The stakeholder process for the proposed revisions to Section 5.5 started on October 5, 2011. During the initial meeting a couple of the stakeholders requested the Division perform a cost benefit analysis. Further, a couple of stakeholders further requested the cost benefit analysis compare the cost of implementing a construction project not subject to Section 5.5 of the regulations to a similar construction project subject to the proposed Section 5.5 of the regulations. In response, the Division indicated that the requested cost benefit was part of the 2006 rulemaking process and not part of the current regulatory revision process. The Division agreed to perform a cost benefit analysis between the current and proposed Section 5.5 Regulations.

The following table presents: 1) major cost drivers in the current Section 5.5 regulations, 2) the proposed revised Section 5.5 regulations, and 3) an estimated cost differential between current and proposed regulations. The regulatory areas evaluated in this cost benefit analysis include the impact of: 1) changing the definition of “adequately wet,” 2) changing the definition of “asbestos contaminated soil,” 3) changing the applicability of the regulations, 4) changing the air monitoring requirements, 5) changing the material characterization parameters for disposal at a landfill, 6) changing the material reuse options, and 7) including minimum requirements in the regulations that function as a default plan . The Division recognizes that the current Section 5.5 increased the cost of construction projects that were not previously subject to Section 5.5 requirements. The Division is proposing to modify the existing regulations based on experience gained from implementing the regulations over the last seven years. The modifications included in this cost benefit analysis resulted in cost savings in each of the seven categories identified above. The Division recognizes that individual project costs will vary depending on a variety of factors and negotiated prices. This evaluation used representative project related costs.

Current Regulation	Proposed Regulation	Cost Differential
Adequately wet	Adequately wet	Cost Differential
<p>“Adequately wet” means sufficiently mix or penetrate with liquid to completely prevent the release of particulate material and fibers into the ambient air. If visible emissions are observed coming from asbestos-contaminated soil or asbestos-containing material, then the material has not been adequately wetted. However, the absence of visible emissions is not sufficient evidence of being adequately wet.</p>	<p>“Adequately wet” means sufficiently wet to minimize or eliminate visible emissions of dust and/or debris within the regulated work area and prevent the release of visible emissions from leaving the Regulated Work Area (RWA). The observance of visible emissions, outside of the RWA regulated work area, of dust and/or debris is an indication that soils are not adequately wet.</p> <p>The proposed regulations are predicated on controlling the risk of inhaling asbestos fibers and confining emissions to the RWA, work based on active field observations, resulting in a reduction in water usage.</p>	<p>Estimated Cost Differential: The amount of water used per project varies depending on the type of soil, solid waste, and other environmental and site specific conditions. These variables and factors make the amount of water used per project difficult to predict. The proposed regulations are expected to reduce cost by: 1) reducing staff time dedicated to “mixing and penetrating” activities, 2) limiting overwatering which increased the weight and cost of the material being disposed, and 3) reducing the amount of water required per project. The water cost savings is estimated at \$0.15/yd³.</p>
<p>“Asbestos-contaminated soil” means soil containing any amount of asbestos.</p>	<p>“Regulated Asbestos Contaminated Soil” (“RACS”) means soil, ash or debris (plus 6 inches in all directions of surrounding soil or other matrix material):</p> <p>The proposed regulations are based on managing the potential risk from inhaling asbestos fibers in contrast to managing soil with “any amount of asbestos.” The proposed RACS approach has several key advantages as follows: 1) RACS focuses on materials that have a high potential to release fibers, such as: friable asbestos materials, non-friable asbestos containing materials that have a high propensity to release fibers, and handling</p>	<p>“Estimated Cost Differential: The proposed regulations are expected to reduce the amount of time and costs for each of the items listed below:</p> <ol style="list-style-type: none"> 1) Cost savings per day of CABI on site: \$55/hr; 2) Time savings by allowing removal of RACS and continuation of the project not subject to Section 5.5; This proposed change will reduce costs by not requiring all associated management and air monitoring costs identified below; 3) RACS removal with surrounding soil eliminates sampling. Cost of

	<p>practices that could cause nonfriable materials to release fibers, 2) the proposed approach utilizes Certified Asbestos Building Inspector's (CABI's) training, experience, and professional judgment to make in-field/real-time determinations of material type and condition, 3) the proposed approach will also allow the visual removal of RACS, with the surrounding soil, and the remaining soils will not be subject to Section 5.5, until such time that more RACS is encountered, and 4) the proposed regulations includes an exemption for non-friable asbestos containing materials that do not have a high propensity to release fibers.</p>	<p>sampling: \$12 - \$15/PLM</p> <p>4) RACS removal with surrounding soil reduces disposal of RACS will reduce disposal cost: Est. \$300/yd³ (100yds), \$75/yd³ (100-1,000yds), \$65/yd³ (1,000+ yd³)</p> <p>5) While difficult to quantify due to the site specific variability in the type of ACM managed during projects, the revised regulations will not require management under Section 5.5 of non-friable materials that do not have a high propensity to release fibers.</p>
<p>Applicability</p>	<p>Applicability</p>	<p>Cost Differential</p>
<p>The requirements apply to property with asbestos-contaminated soil at which soil-disturbing activities are occurring or planned for any area containing asbestos-contaminated soil. The requirements are triggered when the owner or operator has reason to know of asbestos-contaminated soil at a site or observed material that is suspected of containing asbestos, or has reason to believe that visible asbestos may be encountered. This approach is predicated on a reason to believe and may cause the implementation of Section 5.5 requirements when no asbestos contaminated soil is known to be present.</p>	<p>If debris is disturbed or encountered during soil disturbance, a Qualified Project Monitor (QPM) must observe soil disturbing activities and determine if suspect asbestos containing material is encountered. Currently many of the Section 5.5 soil management plans require the use of a CABI when solid waste is encountered. The proposed regulations recognizes that many solid wastes do not include asbestos containing material, asbestos materials that have a propensity to release asbestos fibers, or involve handling practices that will release asbestos fibers. The proposed approach will allow the use of a QPM and reduce the number of days and hours that a CABI is required to be onsite. The proposed approach is based on visual observations identifying when suspect asbestos containing material is encountered.</p>	<p>The proposed regulations are expected to reduce the number of days that a project is subject to the Section 5.5 regulatory requirements. Each day of not being subject to Section 5.5 may reduce project costs, not including disposal costs, as identified below:</p> <ol style="list-style-type: none"> 1) CABI: \$55/hr or \$440/day; 2) Air Monitoring: \$830/day; 3) Elimination of asbestos contaminated soil management and disposal costs ranging from \$60/yd³ to \$350/yd³. ; and 4) Elimination of watering unregulated soils is approximately \$0.15/yd³ 5) More reuse of soils reduces costs as depicted below.

	<p>Therefore, the owners/operators do not have to prematurely implement the Section 5.5 requirements. Since the regulations are applicable upon the disturbance or observation of suspect asbestos containing material, they will still minimize the release of asbestos fibers and remain protective of human health and the environment.</p>	
<p>Air Monitoring</p>	<p>Air Monitoring</p>	<p>Cost Differential</p>
<p>An air monitoring plan is required that demonstrates dust-control measures to ensure the safety of people in and around the work area and prevent release of asbestos fibers outside the work area. The air monitoring plan shall include a contingency plan for immediate work stoppage, or modification of dust control measures, in the event that approved measured or visible dust limits, as defined in the air monitoring plan, are exceeded in or around the work area. The typical asbestos contaminated soil management plan includes, on a daily basis: 4 ordinal samples, 2 area equivalent on-personnel samples and 2 downwind floaters samples collected and analyzed via PCM. Follow up TEM analysis of the two highest PCM samples is also typical.</p>	<p>Air monitoring is required to verify the effectiveness of the engineering controls and ensure they are minimizing the release of, and/or exposure to, asbestos outside of the RWA. The regulations incorporate a tiered air monitoring approach providing less frequent air monitoring given demonstrated effectiveness of work practices. The regulations include work practices specific to mechanical and/or hand disturbance of RACS including measures to prevent the release of visible emissions outside of the RWA. The air monitoring requirements are progressive depending on the method of disturbance, friability of material, and presence of receptors. Air monitoring is not required for hand disturbance of RACS, and air monitoring is not required for RACS projects of two days or shorter duration. This is allowed because the analytical results will not be received in time to affect changes in engineering controls.</p>	<p>The proposed regulations incorporate several key changes to the air monitoring requirements as follows:</p> <ol style="list-style-type: none"> 1) Projects of 2 days or fewer require no air monitoring: Cost savings based against the current regulations is approximately \$1,660. 2) Projects with a 150' buffer (i.e., no adjacent receptors) require no air monitoring: Cost savings based against the current regulations is approximately \$4,150/every 5 days. 3) Single and Multiday non-friable and friable projects will have an estimated cost savings from reduced TEM and PCM samples/analysis, of \$155/day (\$775/5 day) and \$40/day (\$200/5 day) respectively. <p>The cost estimates for current, proposed non-friable, proposed friable single, less than 5 day, and greater than 5 day are provided below</p>

<u>Current Regulations</u>				<u>Proposed Non-Friable <5 Day</u>				<u>Proposed Friable < 5 Day</u>			
#	Activity	Cost	Tot	Activity	Cost	Tot		Activity	Cost	Tot	
	8 PCM	\$ 20	\$ 160		4 PCM	\$ 20	\$ 80		6 PCM	\$ 20	\$ 120
	2 TEM (+/-)	\$ 75	\$ 150		1 TEM (+/-)	\$ 75	\$ 75		2 TEM (+/-)	\$ 75	\$ 150
	8 AMS - Hrs	\$ 65	\$ 520		8 AMS - Hrs	\$ 65	\$ 520		8 AMS - Hrs	\$ 65	\$ 520
		Per Day	\$ 830			Per Day	\$ 675			Per Day	\$ 790
<u>Current</u>				<u>Proposed Non-Friable > 5 Day</u>				<u>Proposed Friable > 5 Day</u>			
#	Activity	Cost	Tot	Activity	Cost	Tot		Activity	Cost	Tot	
	40 PCM	\$ 20	\$ 800		20 PCM	\$ 20	\$ 400		30 PCM	\$ 20	\$ 600
	10 TEM (+/-)	\$ 75	\$ 750		5 TEM (+/-)	\$ 75	\$ 375		10 TEM (+/-)	\$ 75	\$ 750
	40 AMS - Hrs	\$ 65	\$ 2,600		40 AMS - Hrs	\$ 65	\$ 2,600		40 AMS - Hrs	\$ 65	\$ 2,600
		5 Day	\$ 4,150			5 Day	\$ 3,375			5 Day	\$ 3,950
<u>Disposal Cost:</u>				<u>Disposal Cost:</u>				<u>Cost Differential</u>			
<p>The current regulations list the requirements for the disposal of ACS under three categories: 1) ACS with visible non-friable asbestos, 2) ACS with visible friable asbestos, and 3) ACS with no visible asbestos. Currently, Section 5.5 requires disposal of ACS with <i>any</i> amount of friable ACM as friable asbestos waste. This results in an entire load being disposed of as friable asbestos waste due to the presence of a small amount of friable ACM.</p>				<p>The proposed regulations approach the issue of disposal on a per load basis. If a volume of debris contains less than 1% of friable ACM per load, based on visual estimation through continuous inspection, and the debris is all assumed to be RACS, then a CABI is not required to make a friable ACM determination. This provision is based on the premise that soil is the primary matrix and the debris and/or RACS is only a portion of the total load being managed or disposed. This approach will still remain protective because: 1) landfills will be notified of the material content and source, 2) landfill employees are trained to manage these materials in a safe manner, 3) the landfill is a permitted, controlled and managed disposal setting, 4) general public is prevented from co-disposing of materials at landfills, and 5) the materials will be buried in a timely manner.</p>				<p>The proposed regulations may have an estimated reduced disposal cost as follows :</p> <ol style="list-style-type: none"> 1) Less material will require disposal as friable asbestos waste. This will allow for disposal of RACS and surrounding matrix at more and closer landfills. 2) Reduced hauling costs: \$100/hour 3) Reduced liner costs: \$100-\$200/ liner. RACS requires 1 liner versus material disposed of as friable asbestos waste. Cost saving of staff not watching the loading and lining activities \$65/hr. 4) Less material subject to Section 5.5 with potentially avoided excavation, loading, hauling, and disposal combined costs ranging from \$60/yd³ to \$350/yd³. 			

<p>Material Reuse:</p> <p>Section 5.5.7 states “ (D) Soils that are not asbestos-contaminated, based on analysis showing no detectable amounts of asbestos, may be replaced into the disturbed area as needed, used as fill, or disposed as solid waste.” Therefore, even the onsite reuse of soil requires sampling.</p>	<p>Material Reuse:</p> <p>The proposed regulations allow the reuse of materials on-site under the following constructs:</p> <ol style="list-style-type: none"> 1) Onsite reuse of RACS within the originally impacted area with appropriate cover and environmental covenant; 2) Beneficial use of RACS outside of the originally impacted area may be approved by the Department pending approval of a beneficial use plan, appropriate cover and environmental covenant; 3) RACS soils that are clean of ACM and subsequently verified clean via visual inspection and sampling may be reused without restriction. <p>These approaches recognize the potential geotechnically sound properties of RACS impacted soils as fill materials with specific restrictions and criteria including covers, environmental covenants and an evaluation of the beneficial merits of RACS impacted soils while still being protective.</p>	<p>Cost Differential:</p> <p>Estimated Cost: The proposed regulations may reduce the cost of asbestos contaminated soil projects by:</p> <ol style="list-style-type: none"> 1) Reducing or eliminating the need to transport contaminated soil for disposal; Haul truck approx \$100/hr 2) Reducing or eliminating the disposal cost of contaminated soil estimated at between \$65.00 - \$300.00 per cubic yard for non-friable RACS; 3) Reducing or eliminating the cost of sampling soil for “clean verification”: Cost Approx. \$12 - \$15 /sample and 4) Reducing or eliminating the cost of clean fill material;
<p>Plan Development</p>	<p>Plan Development</p>	<p>Estimated Cost</p>
<p>The current regulations do not contain a default plan. Therefore owners and operators must develop SOPs or a site specific plan prior to commencing soil disturbing activities with or suspected to contain asbestos contaminated soil. The current regulations contain regulatory requirements, but not guidance on</p>	<p>The proposed regulations include minimum requirements that serve as a default plan. Facilities may elect to follow the default requirements and go directly to project implementation following notification, without waiting for Department review or approval. In addition, the proposed regulations allow for the development of standard operating</p>	<p>Estimated cost saving for eliminating plan development is approximately \$2,000 to \$4,000.</p>

<p>developing a plan. Although, the Department, in conjunction with stakeholders, developed the guidance document to support the current regulations, the regulated community has alleged that the Department was regulating their projects via fiat through the guidance. Therefore, the regulated community and stakeholders requested that the Department develop directly implementable regulatory requirements.</p>	<p>procedures and a site specific management plan.</p> <p>The minimum requirements that serve as a default plan were developed with stakeholder input as means to expedite the implementation of RACS projects. The minimum requirements: 1) eliminate the requirement for a plan to be developed and submitted for Division review and approval; 2) provide an immediately implementable plan; 3) eliminate the time and cost associated with Division review of plans; 4) expedite project implementation; 5) the minimum requirements provide a predictable framework for developing and implementing site specific management plans. The minimum requirements eliminate regulating via guidance: and are deemed to be protective of potential receptors.</p>	
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