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**OCCUPATIONAL EXPOSURE****PARASITES****Application of OSHA's Bloodborne Pathogen Standard to Bed Bugs**

BY DANIEL W. WHITNEY

**B**y all accounts there has been a major resurgence of bed bug infestations in the United States in recent years. Bed bugs breed rapidly in a multitude of environments where they are not subjected to effective extermination programs. Given this fact, the epidemic of bed bugs is likely to accelerate. The implication of an increasing frequency of bed bug infestation is that more people will encounter bed bugs and be exposed to any associated health risks. This article reviews the Bloodborne Pathogen Standard (“BPS”) promulgated by OSHA to deal with occupational exposures to bloodborne pathogens, and argues for acceptance of two propositions:

*First*, that the OSHA BPS standard applies to human blood on which bed bugs feed and which is found in bed bug feces or undigested or partially digested human blood released by a crushed engorged bed bug. Even if not directly bitten by bed bugs, employees in the hotel

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industry who handle laundry soiled with bed bug feces or digestive contents, and employees in other industries who encounter surfaces contaminated with bed bug feces or blood released from its gut are entitled to the protection of the BPS.

*Second*, just as employers must provide workers with a safe and healthy workplace, landlords, hotels and other providers of lodging service must also provide their tenants and guests with a safe and healthy environment. Simply stated, workers are entitled to protection against bloodborne pathogens, and hotel guests and families living in apartment communities, who are directly exposed to bed bug feces or digestive contents and thereby face a heightened hazard, are entitled to the same protection. As non employees, tenants and guests are not covered by OSHA, yet are owed a duty of care under state law that should similarly recognize the risks presented by bloodborne pathogens. The hazard posed by bloodborne pathogens is no respecter of classification by status as an employee or resident, and must be dealt with accordingly.

**OSHA's Bloodborne Pathogen Standard**

In 1970 the Occupational Safety and Health Act (“OSH Act”) was enacted “to assure so far as possible every working man and woman in the Nation safe and healthful working conditions to preserve our human resources.”<sup>1</sup> Under the OSH Act, the Secretary of Labor is authorized to “set mandatory occupational safety and health standards” for employers and to issue citations when employers fail to comply.<sup>2</sup> Federal OSHA authority extends to all private sector employers with one or more employees, as well as federal civilian employees. In addition, many states administer their own occupational safety and health programs through plans approved under Section 18(b) of the OSH Act. These plans

<sup>1</sup> 29 U.S.C. § 651(b).

<sup>2</sup> *Id.* §§ 651(b)(3), 655, 658(a).

must adopt standards and enforce requirements that are at least as effective as Federal OSHA requirements, including the BPS. In 1991 OSHA promulgated the BPS,<sup>3</sup> to comply with a congressional directive to deal with “occupational exposures to the hepatitis B virus, the human immunodeficiency virus and other blood-borne pathogens.”<sup>4</sup>

Bloodborne pathogens are microorganisms in human blood that can cause disease in humans.<sup>5</sup> The most common ones are hepatitis B virus (“HBV”), hepatitis C virus (“HCV”) and human immunodeficiency virus (“HIV”). Infectious materials include blood and any bodily fluid visibly contaminated with blood.<sup>6</sup> The BPS is designed to protect workers from exposure to infectious agents carried in the blood. As explained by OSHA in an interpretation letter, the development of this standard took over five years:

The development of this standard by OSHA took more than five years, beginning with close cooperation on the development of a proposed standard with the Centers for Disease Control and Prevention (CDC), Department of Health and Human Services. The proposed standard was based on the scientifically sound infection control practice of “universal precautions” originally established by the CDC for handling of body fluids known to transmit HIV.

Following the publication of the proposed standard, the public, particularly the dental and medical communities, submitted approximately 3,000 comments to the official record. In addition, OSHA held five public hearings, in Washington, D.C., Chicago, New York City, Miami and San Francisco, where 440 individuals and organizations testified. The comments and testimony underwent extensive review and analysis, and many of the suggested changes were adopted in the final rule. In addition, the U.S. Congress held a series of hearings concerning the proposed Bloodborne Pathogens standard. Many individuals and groups testified at these hearings, including the American Medical Association and the American Dental Association.<sup>7</sup>

The BPS thus is the product of an unusually exhaustive expert review, analysis and feedback, all founded on the scientifically established infection control practice of Universal Precautions.

The BPS requires employers to instruct all employees to practice Universal Precautions. *This approach to infection control requires all human blood to be treated as if it is infected with bloodborne pathogens.*<sup>8</sup> “Universal precautions shall be observed to prevent contact with blood or other potentially infectious materials. Un-

der circumstances in which differentiation between body fluid types is difficult or impossible, all body fluids shall be considered potentially infectious materials.”<sup>9</sup> Employers are responsible for ensuring that workers do not come into direct contact with potentially infectious materials while performing their job. All employees who could be “reasonably anticipated” to come into contact with blood as a result of performing their job are covered by the standard.<sup>10</sup>

BPS requires employers to establish an Exposure Control Plan.<sup>11</sup> Employees who have occupational exposure to blood or other potentially infectious materials (“OPIM”) are covered by this standard. *Occupational exposure* is defined as “reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or OPIM that may result from the performance of an employee’s duties.”<sup>12</sup> One of the central provisions of the standard is that employers are responsible for identifying job classifications which have occupational exposure.<sup>13</sup> Employers must identify in writing, tasks and job classifications where occupational exposure to blood occurs without regard to personal protective clothing and equipment. An exposure determination must be conducted to identify occupationally exposed employees. As defined, occupational exposure is not limited to employees who experience occupational exposure by virtue of the fact that they render certain health care services. The BPS requires the employer to make HBV vaccinations available to all employees with occupational exposure to bloodborne pathogens.<sup>14</sup> This must be offered at no cost to the employee. In the event of an exposure incident, post-exposure follow-up must be provided at no cost to the employee. This includes immediate medical follow-up, testing the employee’s blood and counseling. Medical records must be maintained for the duration of employment plus 30 years.<sup>15</sup>

## Bed Bug Feces Are a Biohazard

Bed bugs feed exclusively on blood, and prefer human blood. Often bed bugs exist in an environment where the only source of blood is humans. Bed bugs feed about once a week and typically defecate immediately after eating.<sup>16</sup> The feces originates directly and exclusively from a source of bulk blood. The BPS defines blood as “human blood, human blood components, and products made from human blood.”<sup>17</sup> Given an exclusive diet of human blood, bed bug feces must be considered a product made from human blood, albeit a waste product, and the bug’s digestive contents are in fact blood. The BPS further defines *regulated waste* as:

<sup>3</sup> 29 C.F.R. § 1910.1030.

<sup>4</sup> Department of Labor, Health and Human Services, and Education, and Related Agencies Appropriations Act, Pub.L. No. 102-170 § 100, 105 Stat., 113 (1992).

<sup>5</sup> 29 C.F.R. § 1910.1030(b).

<sup>6</sup> *Id.*

<sup>7</sup> OSHA letter of 8/31/97 to Dr. H. Metz (available at [http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=INTERPRETATIONS&p\\_id=22468](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=INTERPRETATIONS&p_id=22468)) (emphasis added). OSHA requirements are set by statute, standards and regulations. OSHA interpretation letters are responses to employers who pose questions on specific OSHA standards. Letters of interpretation provide guidance and explain these requirements and how they apply to particular circumstances, but they do not create additional employer obligations.

An index by year for all of the OSHA interpretation letters can be found at [http://www.osha.gov/pls/oshaweb/owasrch.search\\_form?p\\_doc\\_type=INTERPRETATIONS&p\\_toc\\_level=0](http://www.osha.gov/pls/oshaweb/owasrch.search_form?p_doc_type=INTERPRETATIONS&p_toc_level=0).

<sup>8</sup> 29 C.F.R. § 1910.1030(b).

<sup>9</sup> *Id.* § 1910.1030(d)(1).

<sup>10</sup> *Id.* § 1910.1030(b).

<sup>11</sup> *Id.* § 1910.1030(c)(1)(i).

<sup>12</sup> *Id.* § 1910.1030(b).

<sup>13</sup> *Id.* § 1910.1030(c)(2)(i)(A)-(C). OSHA letter of 8/28/95 to D. Trimble (available at [http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=INTERPRETATIONS&p\\_id=21904](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=INTERPRETATIONS&p_id=21904)).

<sup>14</sup> *Id.* § 1910.1030(f)(1)(i).

<sup>15</sup> *Id.* § 1910.1030(h)(1)(iv).

<sup>16</sup> As recognized by entomologist L.J. Pinto, “[a] drop of blood is often extruded out the anus as the bug completes its blood meal. It is this blood drop that produces the typical brown or rusty spots seen on sheets or clothing in infested sites.” Pinto, L.J., *et al.*, “Bed Bug Handbook,” Pinto & Associates Inc. (Dec. 2007) pp. 51-52.

<sup>17</sup> 29 C.F.R. § 1910.1030(b).

liquid or semi-liquid blood or other potentially infectious materials; contaminated items that would release blood or other potentially infectious materials in a liquid or semi-liquid state if compressed; items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; and pathological and microbiological wastes containing blood or other potentially infectious materials.<sup>18</sup>

As defined, bed bugs can be considered a source of human blood and regulated waste. By exhibiting reflexive defecation, this means that the bed bug feces can be deposited on the host. If not deposited on the skin or mucous membrane of the host, the characteristic rusty brown fecal stains, appearing very much like the blood stains that they are, can be found on pillow cases, sheets, bed clothing and on mattresses and mattress covers as well as other locations. Undigested or partially digested human blood may also be released by crushing an engorged bed bug.<sup>19</sup> The reality is that there is no reasonable means for a layperson who encounters tiny reddish brown spots to distinguish bed bug feces from the contents of an engorged bed bug accidentally crushed by its host unless the carcass remains in proximity to the blood stain.

There is no sound scientific reason for assuming that the bed bug feces is pathogen free. To assume that bed bugs purify infected human blood flies in the face of Universal Precautions and ignores relevant scientific literature identifying pathogens both within and excreted by bed bugs. A recent review of bed bugs and infectious diseases identified 45 pathogens as potentially transmissible by bed bugs.<sup>20</sup> For the purposes of this article only two such pathogens will be discussed, the HBV and *Trypanosoma cruzi*, a protozoan parasite which causes Chagas disease. The presence of the HBV and *Trypanosoma cruzi* bloodborne pathogens has been documented in bed bug feces. Both diseases are potentially fatal, yet there is a significant difference. There is an effective vaccine against HBV but not for Chagas disease.

## Hepatitis B

Recently, the possibility of HBV transmission by bed bugs has attracted attention. HBV is considered “[t]he best candidate for human disease transmission by bed bugs.”<sup>21</sup> Studies have repeatedly demonstrated that bed bugs collected from living quarters in HBV endemic areas in various locations were hepatitis B surface antigen positive.<sup>22</sup> Hepatitis B surface antigen (HB-sAg) has

<sup>18</sup> *Id.*

<sup>19</sup> Jupp, P., “The mechanical transmission of hepatitis B virus by the common bedbug (*Cimex lectularius* L.) in South Africa,” *S. Afr. Med. J.* 1983; 63(3):77-81 (finding no biological multiplication of HBsAg, but mechanical transmission of virus from bed bugs to man could occur via infected feces, regurgitation, interrupted feeding or crushing infected bugs).

<sup>20</sup> Delauney, P., et al., “Bed Bugs and Infectious Diseases,” *Clin. Infect. Dis.* 52:989-90 (2011). See generally, Whitney, D., “Bed Bug Disease Transmission: A Primer for Litigators,” 26 *TXLR* 1405, 12/1/11.

<sup>21</sup> Goddard, J., de Shazo, R., “Bed Bugs (*Cimex lectularius*) and Clinical Consequences of Their Bites,” *JAMA*, Vol. 301, No. 13 (4/1/09), p. 1361 (“Goddard JAMA”).

<sup>22</sup> See Jupp, P., et al., “Infection of the common bed bug (*Cimex lectularius* L.) with hepatitis B virus in South America,” *S. Afr. Med. J.* 1978; 53(15):598-600 (30.6/1000 bed bugs col-

lected from huts in HBV endemic areas in Africa were HBsAg positive); Wills, W., et al., “Hepatitis-B virus in bed bugs (*Cimex hemipterus*) from Senegal,” *Lancet*, 1977; 2(8031): 217-219 (14% of bed bugs collected from bedding in huts in Senegal, West Africa, were HBsAg-positive); El-Masry, S., Kotkat, A., “Hepatitis B surface antigen in *Cimex lectularius*,” *J. Egypt Public Health Assoc.* 1990; 55:230-236 (33.5%; and for HBsAg unknown status (n=229 bugs), 24.4%) (10/276 military recruits (3.6%) were HBsAg-positive; 300/1800 bed bugs (16%) collected from barracks were HBsAg-positive); Brotman, B., et al., “Role of arthropods in transmission of hepatitis-B virus in the tropics,” *Lancet*, 1973; 323:1305-1308.

In upholding the BPS in a challenge to its validity by the American Dental Association, Judge Posner described the nature of the hazard posed by Hepatitis B and compared it to the risks posed by HIV:

Hepatitis B is a far more common disease than AIDS, though less scary, publicized, or stigmatized. The Hepatitis B virus (HBV) produces antibodies that fight the virus but at the same time destroy liver cells in which the virus has lodged. Although most infected persons recover uneventfully, about 1 percent die and about 6 to 10 percent of adult (and a much higher percentage of child) victims of Hepatitis B become carriers. The virus is much more virulent than the AIDS virus, and the introduction of a carrier's blood into another person's bloodstream is a particularly efficient means of transmission. Unlike the AIDS virus, which cannot survive exposure to air, *HBV can survive on the surface of a piece of clothing or other material at room temperature for a week and can thus be spread by dirty laundry.*

lected from huts in HBV endemic areas in Africa were HBsAg positive); Wills, W., et al., “Hepatitis-B virus in bed bugs (*Cimex hemipterus*) from Senegal,” *Lancet*, 1977; 2(8031): 217-219 (14% of bed bugs collected from bedding in huts in Senegal, West Africa, were HBsAg-positive); El-Masry, S., Kotkat, A., “Hepatitis B surface antigen in *Cimex lectularius*,” *J. Egypt Public Health Assoc.* 1990; 55:230-236 (33.5%; and for HBsAg unknown status (n=229 bugs), 24.4%) (10/276 military recruits (3.6%) were HBsAg-positive; 300/1800 bed bugs (16%) collected from barracks were HBsAg-positive); Brotman, B., et al., “Role of arthropods in transmission of hepatitis-B virus in the tropics,” *Lancet*, 1973; 323:1305-1308.

<sup>23</sup> Goddard *JAMA*, *supra*, p. 1361 (citing Ogston, C., et al., “Persistence of hepatitis B surface antigen in the bed bug *Cimex hemipterus* (Fabr.),” *J. Infect. Dis.* 1979; 140(3):411-414 (HBsAg found in most bed bugs 4 weeks after infected blood meal; one bug was HBsAg-positive 6 weeks after initial feeding); Jupp, P., McElligott, S., “Transmission experiments with hepatitis B surface antigen and the common bed bug (*Cimex lectularius* L.),” *S. Afr. Med. J.* 1979; 56(2):54-57 (HBsAg persisted in bed bugs for > 7 weeks after experimental feeding but no viral replication)).

<sup>24</sup> Goddard *JAMA*, *supra*, p. 1361 (citing Blow, J., et al., “Stercorarial shedding and transtadial transmission of hepatitis B virus by common bed bugs (Hemiptera: Cimicidae),” *J. Med. Entomol.*, 2001; 38(5):694-700 (HBV nucleic acids in the bugs and their excrement up to 35 days after feeding on infected blood meal; HBV DNA detected in bed bugs 21 and 28 days after infectious blood meal); Silverman, A., et al., “Assessment of hepatitis B virus DNA and hepatitis C virus RNA in the common bed bug (*Cimex lectularius* L.) and kissing bug (*Rhodnius prolixus*),” *Am. J. Gastroenterol.* 2001; 96(7): 2194-2198.

<sup>25</sup> Goddard *JAMA*, *supra*, p. 1365. See also Jupp, P., “The mechanical transmission of hepatitis B virus by the common bedbug (*Cimex lectularius* L.) in South Africa,” *S. Afr. Med. J.* 1983; 63(3):77-81.

Also unlike the AIDS virus, there is a vaccine against HBV, effective in 85 to 97 percent of healthy adults who receive it. Nonetheless, because of the greater virulence of HBV and the fact that many health care workers are not vaccinated, patient-communicated Hepatitis B kills about 200 health workers in the U.S. per year—roughly 100 times the number of such workers infected by patient-communicated HIV.<sup>26</sup>

Because of an absence of human epidemiological studies looking at HBV acquired from bed bugs, there currently are no similar statistics concerning the number of deaths, if any, each year caused by bed bug-communicated HBV.

## Chagas Disease

Research has further established that another blood-borne pathogen in the form of a protozoan parasite known as *Trypanosoma cruzi* can survive in the gut of the bed bug. Chagas disease has been termed “the new HIV/AIDS of the Americas.”<sup>27</sup> Chagas disease, after a long latency period, is manifested in potentially fatal digestive and cardiac disorders, and is often undiagnosed.<sup>28</sup>

There is evidence that bed bugs can acquire, maintain and transmit the *Trypanosoma cruzi* in the same fashion as the kissing bug (family *Reduviidae*, sub family *Triatominae*):

Within the insect order Hemiptera, to which bed bugs belong, the triatomine bugs [“kissing bugs”] from the family Reduviidae are known to transmit *Trypanosoma cruzi*, the etiological agent of Chagas disease. The developmental cycle of this protozoan is relatively simple and occurs only within the gut of the insect. *Transmission to humans results through contact with infected feces.* In regions of South America where Chagas disease is endemic, both bed bugs and triatomine bugs occur in the domestic environment. Thus, in light of the coexistence and relatedness of the bugs and the simple parasite developmental pathway, a number of field and laboratory investigations on the relationship between *T. cruzi* and bed bugs have been undertaken. Research up until the early 1960s was reviewed by Burton, and indications were that both *C. lectularius* and *C. hemipterus* were capable of acquiring and maintaining the parasite, and infectious stages *could be transmitted in the feces.* . . . In Argentina, *C. lectularius* bed bugs fed on wild-infected rodents were capable of transmitting *T. cruzi* and at an efficiency equivalent to that of triatomine bugs. In those studies, *T. cruzi* was found to persist for more than 320 days in the bed bugs, and the complete developmental stages in the gut were observed via microscopy. Similar findings were recorded in another study for *C. lectularius* infected with *T. cruzi*; there was complete parasite development within the gut, including the growth of the metacyclic infective stages, which were subsequently successfully

<sup>26</sup> *American Dental Ass’n v. Martin*, 984 F. 2d 823, 824 (7th Cir. 1993), cert. denied 510 U.S. 859 (1993) (emphasis added).

<sup>27</sup> Hotez, P. et al., PLoS Neglected Tropical Diseases, Editorial, “Chagas Disease: The New HIV/AIDS of the Americas” (available at <http://www.plosntds.org/article/info%3Adoi%2F10.1371%2Fjournal.pntd.0001498>).

<sup>28</sup> Bern, C., et al., “Evaluation and Treatment of Chagas disease in the United States,” *JAMA*, 2007; 298 (18): 2171-2181 (11/14/07); Hagar, J., Rahimtoola, S., “Chagas’ Heart Disease in the United States,” *NEJM*, 1991 325:763-768 (9/12/91). The CDC has identified Chagas disease as one of the “Neglected Parasitic Infections” (<http://www.cdc.gov/parasites/mpi.html>), a group of five parasitic diseases targeted by the CDC for public health action.

transmitted to mice. Solid epidemiological or other evidence linking bed bugs with *T. cruzi* transmission within the domestic environment is currently lacking. However, it may be exceedingly difficult to differentiate the relative contribution to *T. cruzi* transmission in localities where both bed bugs and triatomine bugs coexist.<sup>29</sup>

Laboratory studies and investigation have not only confirmed vectorial competence, but have observed *Trypanosoma cruzi* in wild bed bugs.<sup>30</sup>

## Occupational Exposures

If OSHA determines, on a case-by-case basis, that sufficient evidence exists of reasonably anticipated exposure, the employer will be held responsible for providing the protections of 29 C.F.R. 1910.1030 to the employees with occupational exposure. The BPS may apply to housekeeping workers in healthcare facilities:

Housekeeping workers in healthcare facilities may have occupational exposure to blood borne pathogens, as defined by the standard. ‘Occupational exposure’ is defined as ‘reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious material which may result from the performance of an employee’s duties.’ Individuals who perform housekeeping duties, particularly in patient care and laboratory areas, *may be at increased risk for exposure when they perform tasks such as cleaning blood spills and handling infectious wastes.*<sup>31</sup>

Depending on the circumstances, OSHA has recognized the applicability of the BPS to housekeeping in non-health care facilities such as housekeeping staff in the hotel industry:

OSHA does not generally consider housekeeping staff in non-health care facilities to have occupational exposure. However, in keeping with the above mentioned requirement that the employer evaluate each job classification for occupational exposure, *employers in the hotel industry would have to take into account all circumstances of potential exposure and determine which, if any, employees may come into contact with blood or OPIM during normal cleaning and handling of laundry.* Employees who handle linens soiled with feces, nasal secretions, sputum, sweat, tears, urine, vomitus, or saliva (other than saliva from dental procedures) would not be occupationally exposed during that task as these substances are not included in the standard’s definition of ‘other potentially infectious materials.’

An employer may choose to designate specific employees to perform any tasks and procedures (e.g., handling linens soiled with urine that did contain visible blood) that involve

<sup>29</sup> Doggett, S., et al., “Bed Bugs: Clinical Relevance and Control Options,” *Clin. Micro. Reviews* 2012; 25(1) 164; 173 (footnotes omitted) (emphasis added). See also Goddard J., de Shazo R., “Bed Bugs (*Cimex lectularius*) and Clinical Consequences of Their Bites,” *Goddard JAMA*, supra at p. 1362, Table 2. (citing Jorg, M.E., “*Cimex lectularius* L. (the common bed bug), the vector of *Trypanosoma cruzi*,” *Rev. Soc. Bras. Med. Trop.*, 1992; 25(4): 277-278. (“Goddard JAMA”).

<sup>30</sup> Delaunay, supra, p. 206, Table 1 (citing Burton, G., “Bed bugs in relation to transmission of human diseases,” *Public Health Rep.* 1963; 78: 513-24; Villagran, M., et al., “Natural infection and distribution of triatomines (Hemiptera: Reduviidae) in the State of Queretaro, Mexico,” *Trans R. Soc. Trop. Med. Hyg.* 2008; 102: 833-8; Azevedo D., et al., “Notes on medgut ultrastructure of *Cimex hemipterus* (Hemiptera: Cimicidae),” *J. Med. Entomology* 2009; 43: 435-41.

<sup>31</sup> OSHA letter 6/3/92 to J. Keiler (emphasis added) (available at [http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=INTERPRETATIONS&p\\_id=20697](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=INTERPRETATIONS&p_id=20697)).

occupational exposure and train other employees to defer such tasks to employees designated to perform them.

For enforcement purposes, if OSHA determines on a case-by-case basis that sufficient evidence exists of reasonably anticipated exposure, the employer will be held responsible for providing the protections of 29 C.F.R. 1910.1030 to the employees with occupational exposure. For example, if it can be reasonably anticipated that an employee in a particular hotel will come into contact with contaminated sharps, that employee must be extended the protections of the standard.

Please note that the definition of 'contaminated' applies to dry as well as wet material since, as you correctly stated, the *hepatitis B virus remains viable in dried material for up to seven days*.<sup>32</sup>

OSHA has repeatedly explained that the BPS is not meant only for employees in health care settings:

*The bloodborne pathogens standard addresses the broad issue of occupational exposure to blood and other potentially infectious materials (OPIM) and is not meant solely for employees in health care settings. Since there is no population that is risk-free from human immunodeficiency virus (HIV) and hepatitis B virus (HBV) infectivity, any employee who has occupational exposure to blood or OPIM is included in the scope of the standard.*<sup>33</sup>

Keeping in mind that Hepatitis B virus remains active in dried material for up to a week, a worker whose job includes the cleaning and decontaminating of contaminated items or surfaces would be considered to have occupational exposure. *Contaminated* "means the presence or the reasonably anticipated presence of blood or other potentially infectious materials on an item or surface," and *contaminated laundry* "means laundry which has been soiled with blood or other potentially infectious materials or may contain sharps."<sup>34</sup>

The BPS mandates cleaning and decontamination of working surfaces. "All equipment and environmental and working surfaces shall be cleaned and decontaminated after contact with blood or other potentially infectious materials."<sup>35</sup> This must be done on an expedited basis. "Contaminated work surfaces shall be decontaminated with an appropriate disinfectant after completion of procedures; immediately or as soon as feasible when surfaces are overtly contaminated or after any spill or blood or other potentially infectious materials; and at the end of the work shift if the surface may have become contaminated since the last cleaning."<sup>36</sup> While OSHA does not generally consider housekeeping staff in non-health care facilities to have occupational exposure, it is the employer's responsibility to determine which job classifications or specific tasks and procedures involve reasonably anticipated contact with blood or other potentially infectious materials.

Employers in the hotel/motel industry must take into account all circumstances of potential exposure and determine which, if any, employees may come into con-

tact with blood or other potentially infectious materials during the normal cleaning of rooms, stripping of beds, and handling of laundry from initial pick-up through laundering.

By way of illustration, a hotel room heavily infested with bed bugs will inevitably result in the guests who stay in the room receiving many bites. Depending on the severity of the infestation, a guest may receive literally hundreds of bites in a single night. Under these circumstances it is highly likely that bed bug feces or digestive contents will be deposited on the pillow cases and sheets. Housekeeping staff cannot avoid encountering the soiled items when changing the sheets the morning after. Under this scenario, employees who handle, for example, linens soiled with visible blood would be occupationally exposed to contaminated items within the meaning of the BPS. The employer may designate specific employees to perform the tasks and procedures, if any, that involve occupational exposure and train other employees to defer such tasks to employees designated to perform them.<sup>37</sup> Housekeeping practices must be established to keep the worksite clean and sanitary, and personal protective equipment such as gloves must be provided.

This situation is not limited to the hotel industry. Maintenance workers employed by bed bug infested apartment communities may be required to clean an apartment in preparation for a new tenant. If the unit was previously occupied by a tenant who broke his lease due to a heavy bed bug infestation, the workers may be dealing with bed bug "ground zero." Depending on the severity of the infestation, the walls and baseboards of the unit may be literally smeared throughout with bed bug feces. Under these circumstances, the worker would be exposed to contaminated surfaces within the meaning of the BPS.

Given the widespread prevalence of bed bug infestations in hotels and apartments throughout the country, and the all too frequent tendency of the hotel industry and landlords to downplay adverse health effects associated with bed bugs, it is only a matter of time before OSHA identifies and cites such entities for noncompliance with the BPS.

## Common Law Duties

Although OSHA does not apply to non-employees, OSHA's recognition of the right to safe and healthful working conditions merely parallels longstanding common law premises liability principles of due care. A property owner owes a duty to invitees to "use reasonable and ordinary care to keep his premises safe for the invitee and to protect him from injury caused by an unreasonable risk which the invitee, by exercising reasonable and ordinary care for his own safety will not discover."<sup>38</sup> A similar principle recognizes the rights of tenants to a safe and healthy home. The principle governing landlord liability is stated in the Restatement (Second) of Property: Landlord and Tenant (1977) as follows:

<sup>32</sup> OSHA letter 12/4/92 to W. Valenti (available at [http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=INTERPRETATIONS&p\\_id=20948](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=INTERPRETATIONS&p_id=20948)) (emphasis added).

<sup>33</sup> Application and Enforcement of the Bloodborne Pathogen Standard (available at [http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=STANDARDS&p\\_id=10051](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10051)) (emphasis added).

<sup>34</sup> 29 C.F.R. § 1910.1930(b).

<sup>35</sup> § 1910.1030(d)(4)(ii).

<sup>36</sup> § 1910.1030(d)(4)(ii)(A).

<sup>37</sup> OSHA letter 12/4/92 to W. Valenti (available at [http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_table=INTERPRETATIONS&p\\_id=20948](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=INTERPRETATIONS&p_id=20948)).

<sup>38</sup> E.g., *Rowley v. Mayor & City Council of Balt.*, 305 Md. 456, 465, 505 A.2d 494 (1986); Restatement of Torts (Second) § 314 A (1965).

A landlord is subject to liability for physical harm caused to the tenant and others upon the leased property with the consent of the tenant . . . by a dangerous condition existing before or arising after the tenant has taken possession, if he has failed to exercise reasonable care to repair the condition and the existence of the condition is in violation of:

- (1) an implied warranty of habitability; or
- (2) a duty created by statute or administrative regulation.<sup>39</sup>

Another familiar principle of common law is that defendant's violation of a safety statute or regulation may be considered as evidence of negligence. Significantly, some courts have recognized that a violation of an OSHA regulation can be used by a third-party nonemployee plaintiff as evidence of negligence.<sup>40</sup>

<sup>39</sup> *Id.* § 17.6. See generally, 2006 International Property Maintenance Code § 101.3.

<sup>40</sup> See *Orduna v. Total Const. Services*, 271 Neb. 557, 713 N.W.2d 471, 479 (2006) ("We hold that in a negligence case brought by a nonemployee third-party against a construction

## Conclusion

Occupational exposure to bed bug feces and digestive contents triggers a worker's right to the protections of the BPS. Employers must meet the requirements of the BPS in order to protect their workers and avoid the fines stemming from noncompliance. Moreover, as a matter of reasonable prudence, owners and operators of apartment communities, hotels and other facilities where bed bugs are present must not remain willfully blind to the bio-hazard posed by bed bugs, and awareness of OSHA's BPS should lead to appreciation of the hazard. Understanding the relevant science and intent of the BPS will reduce the risks of bloodborne pathogens, and avoid exposure to potential fines as well as civil liability under state law.

company, a violation of an OSHA regulation, while not negligence as a matter of law, may nonetheless be evidence of negligence . . . .") *Accord Thoma v. Kettler Bros., Inc.*, 632 A.2d 725, 730 (D.C. 1993); *Koll V. Manatt's Transp. Co.*, 253 N.W.2d, 270 (Iowa 1977).