REAL ESTATE TRAINERS

Recognizing Real Estate Red Flags

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6 Hours of Continuing Education in Real Estate
for Salesperson and Broker License Renewal

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Chapter One: Red Flag Defined and Disclosure

Important Terms

"as-is"
community facilities tax
Foreign Investment in Real Property Tax Act
Homeowner's Guide to Earthquake Safety
industrial property
liquefaction
material fact
ordnance
Real Estate Transfer Disclosure Statement
sex offender
special studies zone
waiver

Learning Objectives

Upon completion of Chapter One, you should be able to complete the following:

- Define the term *red flag*.
- Define the term *material fact*.
- Describe the various disclosure requirements in the TDS.
- Describe the statutory requirements for delivery of the TDS.
- Describe the basic facts of the *Easton v. Strassburger* case.
- Describe the agent's duty of disclosure.
- Describe required geologic and seismic hazards disclosure.
- Describe the minimum standards for smoke detectors.
- Describe the *Foreign Investment in Real Property Tax Act*.

What Is a Red Flag?

A *red flag* is a physical factor about a property that, when a broker sees it, it triggers a red flag in his or her mind that says, "This is a potential material fact that may need to be investigated."

Although this course will not provide an all-inclusive list of potential red flags, our intent is to cover the most common examples of red flags. It is very important to understand that possible red flags can vary depending on the particular property being sold. The point is that licensees must be aware of the facts and circumstances unique to each property, follow their instincts, and point out potential red flags.

Knowing which red flags to look for in a house is one thing; knowing to what extent an agent or broker is responsible for defects in a home that he or she is selling is another question altogether. Even if the law in the agent's state only requires a minimum of responsible behavior, there is always a number of things that an agent can do to improve his or her relationship with the buyer, so that the buyer is more aware of the true condition of the property. If the agent goes beyond the minimum, the use of the home after possession by the buyer will run more smoothly, the buyer will more likely consider the agent to be more responsible, and, as a result, the buyer will return to the agent for any future home purchases. In this section, we will evaluate what the agent's responsibilities are regarding disclosure and what actions can be taken to better help the buyer's purchase, whether required or not.

Disclosure of Material Facts

In California, the landmark case of *Easton vs. Strassburger* (1984) expanded the broker's duty of disclosure. The court held that a real estate broker has an affirmative duty to conduct a reasonably competent and diligent inspection of residential property and disclose to prospective purchasers all facts revealed by the investigation that materially affect the value or desirability of the property.

Because of the Easton decision, the seller must now provide the buyer with a written *Real Estate Transfer Disclosure Statement* that details the mechanical and structural conditions of the property in a form specified by the legislature. All real estate licensees should be familiar with this form so that they can ensure that the buyer is fully informed of the property's condition.

The real estate licensee's duty to disclose is specifically related to facts that are material, and that affect the value or desirability of the property. The misrepresentation of a single material fact may result in an accusation of intentional fraud in certain circumstances.

There is no absolute standard for determining whether or not a fact is material in a particular situation. A fact may or may not be material depending upon the circumstances of each transaction.

Material Fact Defined

Generally, a matter is considered material if the other party would not have entered into the contract had he or she known about the matter. However, this definition is much too general and subjective to be used on a day-to-day basis by licensees.

Material Facts Described

Some facts are so obviously material that there is no doubt that prior knowledge of that fact would have affected the desirability of the property. For example, unstable soil or fill, even in small quantities, would obviously be crucial for any buyer to know. Other matters such as structural defects, building code violations, or termites and dry rot would also be considered material facts, as any reasonable seller would understand that they are of major concern to a buyer. Matters such as these can be difficult to discover by inspection, but are still material to the transaction.

The fact that the seller does not have the proper permits to operate a particular business on the premises that the buyer wants to operate, or the fact that the buyer's business use will violate city zoning ordinances, would drastically change both the value and desirability of the property to the buyer. The existence of an easement, or the lack of a proper water system for the intended use of the property, are also material facts that affect the buyer's decision to buy. Other matters that are obviously material include land that has experienced flooding, buildings that may need substantial structural repairs, and land that is not connected to the public sewer system.

The materiality of these facts is objective in nature and can be determined by examining whether the undisclosed fact had a measurable effect on the marketability, the value of the buyer's highest and best use of the property, or the buyer's or appraiser's opinion of value.

A factor can still be considered material even if it does not affect the structural or physical aspect of the property. In one case, the court held the fact that the buyer's check, in the form of a post-dated check, was a material fact that had to be disclosed to the seller. In another case, the court found that the one-year due date on a purchase-money secured obligation and also the construction nearby of new competition property, were material facts.

The use of an objective or subjective standard to determine whether or not a fact is material can be key depending on the circumstances of a particular case. The test of materiality referenced by most court decisions describes a matter as material when it affects the value or desirability of the property. An objective standard would require that the matter affect either (1) the value and desirability of the property, or (2) a matter that affects the desirability of the property or the transaction where the seller knows that the particular fact is, or could be, important to the buyer.

Property located on a busy street or in a flight path where there is a great deal of noise may be a fact that is objectively material to most buyers, but a location near a school, which may be desirable to a buyer with children, may be unsatisfactory to a buyer who works a graveyard shift and sleeps during the day, when the noise of the school could be a problem. This type of fact would be material only if the seller or the seller's agent is aware of the buyer's peculiar sensitivity. As you can see, a subjective standard for determining materiality can complicate certain situations.

Agent's Statutory Duty of Disclosure

There is a seemingly unlimited number of duties to disclose particular facts to one or both of the parties to a real estate transaction scattered throughout the codes. Many of these duties are imposed on the seller, on the seller's agent, or on both. It is not our intent with this course to discuss every single detail regarding disclosure in real estate, but we will try to cover the most common and most important disclosure requirements encountered on a day-to-day basis.

Disclosure Forms: TDS Review

What is the Real Estate Transfer Disclosure Statement?

A Real Estate Transfer Disclosure Statement (TDS) is a form prescribed in Civil Code § 1102.6. Effective January 1, 1987, most sellers of residential property with one to four units have been required to furnish this completed form to prospective purchasers. Sellers and licensees may comply with this law by utilizing C.A.R. Form TDS-11, which they can obtain from most local Boards of Associations of REALTORS®, or from the C.A.R. Member Products and Services Division.

What Types of Real Estate Transactions Are Covered?

These disclosure requirements apply to transfers by sale, exchange, installment land contract, lease with an option to purchase, option to purchase, or ground lease coupled with improvements of real property (or a residential stock cooperative) with one to four dwelling units.

Exemptions

Certain types of transfers are specifically exempted in Civil Code §1102.1. They are as follows:

1) Transfers requiring a public report pursuant to § 11018.1 of the Business and Professions (B & P) Code and transfers pursuant to § 11010.8 of the B & P Code where no public report is required.

2) Transfers pursuant to court order (probate sales, sales by a bankruptcy trustee, etc.).

3) Transfers by foreclosure (including a deed in lieu of foreclosure and a transfer by a beneficiary who has acquired the property by foreclosure or deed in lieu of foreclosure).

4) Transfers by a fiduciary in the course of the administration of a decedent's estate, guardianship, conservatorship, or trust.

5) Transfers from one co-owner to one or more other co-owners.

6) Transfers made to a spouse, child, grandchild, parent, grandparent, or other direct ancestor or descendant.

7) Transfers between spouses in connection with a dissolution of marriage or similar proceeding.

8) Transfers by the state controller pursuant to the Unclaimed Property Law.

9) Transfers or exchanges to or from any government entity.

However, it should be noted that a real estate licensee still has a duty to conduct a reasonably competent and diligent visual inspection of accessible areas in almost all of the above situations. In other words, although the seller is exempted from having to provide a disclosure statement in certain situations, a licensee must conduct this inspection, and disclose the results of the inspection, in almost all residential transactions that involve one to four units.

Licensee Exemption from Conducting an Inspection

A licensed real estate broker or salesperson does not need to conduct a visual inspection of residential property that is sold as part of a subdivision in which a DRE public report is required (5 or more units). In addition, a broker need not conduct a visual inspection on a subdivision in which a public report is not required because it is a subdivision of improved, single-family homes, in which all improvements are complete, there are no common areas, and whose units are located entirely within the boundaries of a city.

Delivery of the Disclosure Statement to the Buyer

If two or more real estate licensees are acting as agents in the transaction, the selling agent must deliver the statement to the buyer, unless the seller has given other written instructions for delivery. If only one licensee is involved in the transaction, that licensee must deliver the statement to the buyer. If no real estate licensees are involved, the seller is responsible.

The law states that delivery of the disclosure statement to the buyer may be made either in person or by mail. Obviously, personal delivery is preferable.

The disclosure statement must be delivered to the buyer as soon as practicable before the transfer of title. If possible, it would be preferable to provide the completed disclosure statement to the buyer prior to the buyer's signing the offer to purchase. If the buyer receives the disclosure statement after execution of his or her offer to purchase, the buyer will have a three or five-day period to cancel the transaction.

In the case of a lease option agreement, the prospective purchaser should get the disclosure statement before he or she enters into the lease option agreement.

In the case of a new home that is exempt from the TDS requirement, the buyer should get the TDS before he or she enters into the contract to purchase the home, even if it has not yet been built. In other words, no special rule applies.

Buyer's Right to Cancel

"If any disclosure, or any material amendment of any disclosure ... is delivered after the execution of an offer to purchase, the transferee (buyer) shall have three days after delivery in person or five days after delivery by deposit in the mail, to terminate his or her offer by delivery of a written notice of termination to the transferor (seller) or the transferor's (seller's) agent" (Civil Code § 1102.2.).

Structural Additions or Modifications

Civil Code § 1134.5 went into effect on July 1, 1985, and requires sellers of a one-to-four unit residential property to disclose, in writing, to any prospective buyer, if there had been any structural additions or modifications to the property and whether these additions or modifications had been done with permit. This legislation (the Real Estate Transfer Disclosure Statement law) repealed § 1134.5, effective January 1, 1987. However, it should be noted that the mandatory disclosure statement form requires essentially the same disclosures required under the previous law; i.e., that the seller indicate whether he or she is aware of any room additions, structural modifications, or other alterations made without necessary permits or not in compliance with

building codes.

Selling Property As-Is

There is no exemption to providing the disclosure statement for an *as-is* transaction. Unless the seller meets one of the standard exemptions, he or she must provide a Real Estate Transfer Disclosure Statement to the buyer. Remember that even in an as-is transaction, where the seller does not warrant the condition of the property, the seller is still required to disclose all known material facts that affect the value or desirability of the property to the buyer.

If a seller gives the TDS form to the buyer, other disclosure statements are not required unless the parties feel they are necessary. Section I of the disclosure statement provides space for the seller to provide other disclosures required by law, such as a *special studies zone* disclosure or a *purchase money lien on residential property* disclosure. All other disclosures mandated by local, state, or federal law must still be provided to the buyer, in addition to the Real Estate Transfer Disclosure Statement.

Other Disclosure Requirements with the TDS Form

Natural Hazards Disclosure Form Geologic and Seismic Hazards

If the agent provides actual delivery of the proper consumer information booklet on geologic and seismic hazards, then the agent is not required to provide additional information regarding such hazards. However, this rule does not change the duty of the agent to disclose any known geologic, seismic, or other hazards to the buyer that the agent is aware of. If the agent provides actual delivery of the *Homeowner's Guide to Earthquake Safety* to the buyer, the agent is not required to provide additional information regarding such hazards to the buyer. Nevertheless, this rule does not change the duty of the agent to disclose any known geologic, seismic, or other hazards to the buyer that the agent is aware of, if:

1) A map designating the area has been provided to the city or county by the State Geologist.

2) A notice identifying the location of the map has been posted at specific county offices (county recorder, county planning department, and county assessor).

3) The map is sufficiently accurate or scaled so that a reasonable person can determine whether the property is within a delineated earthquake fault zone.

4) If the map shows that the property is located in such a zone, the agent must disclose this to the buyer. In fact, if the map does not clearly show whether or not the property is in a seismic zone, the agent must indicate "yes" on the disclosure form with regard to whether the property exists in a seismic zone. That is, unless the agent can produce a bona fide report that verifies that the property is not in the earthquake hazard zone, then the agent must mark "yes." Similar rules apply to seismic hazard zones (e.g., landslide, liquefaction), wild land areas (risk of forest fires with little, no, or questionable fire protection), special flood hazard areas (e.g., areas identified by FEMA as flood zones on the federal flood maps), potential flooding areas (e.g., dam failure inundation), and very high fire-hazard severity zones.

Nevertheless, none of these rules absolves the agent of the duty to disclose any known geologic, seismic, and other hazards.

Home Energy Rating

If the agent provides actual delivery of the proper consumer information booklet on home energy ratings, then the agent is not required to provide additional information regarding such hazards. However, this rule does not change the duty of the agent to disclose any known home energy problems to the buyer that the agent is aware of.

Sex Offenders

If the agent provides actual delivery of notice of the existence of a database maintained by law enforcement authorities that contains the locations of registered sex offenders, then the agent is not required to provide additional information regarding such hazards. However, this rule may not change the duty of the agent to disclose any known sex offenders in the proximity. Furthermore, a sex offender may not bring an action against a person who discloses information about any sex offenders under these circumstances.

Industrial Properties

If a seller has knowledge of the fact that the area is zoned for industrial use, the seller must give disclosure of this to the buyer. On the other hand, the agent is not specifically covered by this rule. Nevertheless, if the California legislature has determined that such a zoning is important enough for a seller of a residence to disclose it to the buyer, it doesn't take much extrapolation to see that the agent should have known about the industrial zoning and should have disclosed it if it represents a material defect. In other words, if the legislature has determined that a seller's failure to disclose an industrial zone for a residential property is a violation, it is probably safe to assume that such a failure on the part of an agent could also represent a failure to disclose a material defect. This, of course, could vary from sale to sale, but the best philosophy is prevention through disclosure.

Community Facilities Tax

Sellers must notify the buyer if there is a continuing lien that secures the levy of any community facilities tax. Again, although the agent is not specifically required to do this by statute, the question is, "Should the real estate agent have known about and disclosed it if it represents a material defect?"

Ordnance Locations

A seller who has actual knowledge of any former federal or state ordnance locations within a one-mile radius of the property must give written notice of the knowledge as soon as possible before transfer of title. Examples of ordnance locations include military bases or installations, or military reserve installations. Of course, an agent is not specifically required by statute, but once again, the question is, "Should the real estate agent have known about and disclosed it if it represents a material defect?"

Disclosure of Window Security Bars

Disclosure of window security bars and the location of the release mechanisms on those bars must be disclosed. However, this rule does not say whether the seller or the agent must disclose

this information. Perhaps it is best to assume that since the legislature bothered including this provision, it is a material defect, and both the seller and agent can expect to disclose this material defect to the buyer.

Manufactured Homes

A special form is required for manufactured homes. Agents should be sure they use this special form when applicable.

Locally Required Disclosure Form

Local municipalities in California are allowed to establish supplemental local disclosure forms that go beyond what is required by the state law and forms. Of course, this does not mean that the local form replaces the state form; only that if the local municipality (e.g., the county or city) decides to develop such a device, it serves as a supplement for, not a replacement to, the state form.

Waiver of Disclosure

Waiver of disclosure is prohibited. Even if persons of sound mind suggest or agree to not require a disclosure, this cannot relieve the seller or the agents of the requisite state disclosure requirement. An example of an attempted waiver would be an as -is clause in the contract. Purchasing a residential property as-is does not exempt the seller and the agents involved in the transaction from the disclosure requirements in California. This prohibition of a waiver also applies to mobile home sales.

Miscellaneous Disclosure Requirements

Smoke Detectors

At least with regard to single family dwellings, the seller must show in writing that the property complies with the California law regarding smoke detectors. The minimum standard for smoke detectors is to have at least one smoke detector in a central location outside each sleeping area. This means that there must be a smoke detector in each hall outside of a bedroom area. Thus, at least two smoke detectors would be required on a two-story home with bedrooms on each level.

However, if there have been additions, repairs, or alterations to the property that constitute over $1,000 in value, then regardless of age, each bedroom must have a smoke detector in addition to the hall detectors mentioned above. Furthermore, existing dwellings need onl y utilize a battery-operated smoke detector, while new construction must utilize hard-wired smoke detectors with battery backups. Again, question to consider here is, "If the legislature is requiring this of the seller as a significant concern, couldn't a regulator or court suggest by this that failure to do so could also represent the failure of an agent to disclose a material or significant defect to the buyer that the agent should have known about?"

Lead-Based Paint Disclosure Requirements

Of course, existing federal law requires owners to reveal if they know that the property for sale contains lead. In addition, if the agent knows that a test has been done and that it turned out to be

positive for lead, the agent must disclose this to the buyer, especially since it is likely to be considered a significant defect, given all the attention and consideration that this issue is currently receiving.

Termite Inspections

The seller or the seller's agent must deliver a copy of any completed termite inspection as part of the obligation of the seller under the contract. Furthermore, documentation of the report and its delivery must be kept in the agent's records for three years.

Energy Conservation Considerations

If local municipal ordinances require that any home being sold be brought up to a specific energy retrofitting requirement, the seller and the seller's agent should notify the prospective buyer of the requirements of such ordinances and who is responsible for complying with them.

Foreign Investment in Real Property Tax Act (FIRPTA) and State Provision

This law (FIRPTA) is generally interpreted to mean that the buyer is expected to withhold 10% of the gross sales price if the seller is a "foreign person." It would probably be a good idea for any agent in the transaction to notify the buyer of the existence of this law and to recommend that he or she receive further expert consultation on how to comply so that the transaction is properly handled.

A similar law specifically requires escrow holders to notify buyers of a similar obligation on the part of buyers. However, it is recommended that any agents involved in the transaction consider doing the same.

QUIZZES ARE MANDATORY

DRE requires the submission of chapter quizzes before you can access the final examination. You must log in and submit the chapter quizzes online before you can access the final examination. After submitting the last chapter quiz, you will receive a link to the final examination. You were issued a Personal Identification Number (PIN) and login instructions when you enrolled.

Chapter One Quiz

1. What is a *red flag*?

(a) A detrimental financing factor that may prevent the buyer from qualifying for a loan.

(b) A physical factor about a property that, when you see it you say to yourself, "this is a potential material fact that may need to be investigated."

(c) A defect in the subject property's chain of title that casts doubt on the validity of the seller's ownership.

(d) A questionable commission split offer that may result in the selling agent receiving less than the advertised percentage.

2. Which of the following is considered a *material fact*?

(a) Unstable soil on the property.

(b) Evidence of dry rot.

(c) Lack of a proper water system.

(d) All of the above.

3. A Real Estate Transfer Disclosure Statement (TDS) must be furnished to prospective purchasers of:

(a) apartment complexes.

(b) commercial buildings.

(c) vacant land.

(d) residential property with one to four units.

4. Which of the following real estate transactions is exempt from the TDS disclosure requirement?

(a) Transfers from one co-owner to one or more other co-owners.

(b) Probate sales.

(c) Transfers made to a spouse or to a child.

(d) All of the above.

5. If two or more real estate licensees are acting as agents in the transaction, who must deliver the statement to the buyer?

(a) The listing agent.

(b) The selling agent (the agent who obtained the offer).

(c) The listing agent's employing broker.

(d) The escrow agent.

6. If any disclosure, or any material amendment of any disclosure is delivered in-person after the execution of an offer to purchase, the buyer has _____ after delivery of the TDS to terminate his or her offer.

(a) 3 days (c) 10 days

(b) 5 days (d) 30 days

7. If a seller gives the TDS form to the buyer as prescribed by law, then:

(a) other disclosures are required as a disclosure confirmation addendum.

(b) other disclosures are still required to be made separately on individual disclosure statements.

(c) other disclosure statements are not required unless the parties feel they are necessary or if they are required by local, state, or federal law.

(d) other disclosures required by local, state, or federal law are not required.

8. Which of the following statements is CORRECT in regard to the requirement to provide the TDS disclosure statement?

(a) Persons of sound mind may waive the required disclosure.

(b) An *as-is* clause in a contract waives the disclosure requirement.

(c) Waiver of the disclosure requirement is prohibited.

(d) If the sale involves a mobile home, the disclosure may be waived.

9. How many smoke detectors are required on a two-story home with bedrooms on each level?

(a) At least two, in each hall outside a bedroom area.

(b) At least two, on the lower level only.

(c) At least two, on the upper level only since smoke rises.

(d) Only one, in the hall outside of the master bedroom.

10. Concerning the existence of lead-based paint in a home, if the agent knows that a test has been done that turned out to be positive for lead, then which of the following applies?

(a) The agent must physically remove the lead paint, but does not need to disclose the results of the test.

(b) The agent must disclose to the purchaser the presence of the lead-based paint hazard.

(c) The agent should inform the party responsible for the test that they are required to remove it.

(d) The agent may ignore the test as long as it was conducted over a year ago.

Chapter Two: Exterior Red Flags

Important Terms

coping
crawl space
down drain
permit
retaining wall
septic system
slab
splash block
subterranean termites
window well

Learning Objectives

Upon completion of Chapter Two, you should be able to complete the following:

- Identify non-original construction.
- Explain the pitfalls of non-original/non-permitted construction from the buyer's perspective.
- Identify problems that may indicate inadequate drainage.
- Identify and analyze foundation cracks.
- Identify potential problems with swimming pools and spas.
- Identify exterior electrical red flags.

Why Is an Inspection Necessary?

Buying or selling a home is one of the largest financial transactions most families will make. Buyers should know exactly what repairs and maintenance may be required in a home. Sellers should know about potential deal-killers. Uncovering potential problems will help buyers and sellers avoid unpleasant surprises.

What Is Involved?

Most home inspections include a visual examination of the home's exterior and interior, including the roof, foundation, grading, plumbing, septic systems, heating and air-conditioning systems, appliances, visible insulation, floors, walls, windows, and doors.

What If the Inspection Reveals Problems?

If the agent finds problems during an inspection, it does not necessarily mean the buyer should not purchase the home. The agent's inspection may uncover potential problems that will help buyers know in advance which repairs to anticipate, or the seller may be willing to make repairs in order to complete the deal.

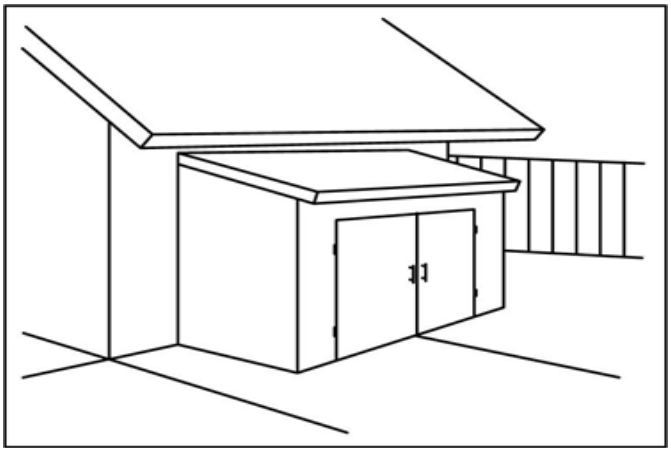
Exterior Red Flags

The agent's inspection for red flags should start with the exterior of the house. Look at the condition of the front and back yards. Check all of the exterior windows, doors, and outer walls. Check for the following specific exterior red flags.

Non-Original Construction

Construction that has been added to the property since it was built is typically referred to as non-original construction. Sometimes this is minor construction (e.g., a newer or different sink than original, a new toilet, etc.), moderate construction (e.g., a new roof cover, siding, etc.), or large construction projects or renovations (e.g., finishing a basement, adding on an addition to the back or side of the house, renovating the kitchen or bathrooms, etc.).

Figure 2.1—Non-original addition



Typically, the more extensive the work, the more apparent that a non-original construction exists. For instance, agents are probably less likely to notice a three-prong outlet on one outlet in the house, while all the others are two-prong outlets as were used in most homes in built prior to 1970. It is likely the outlet is not a true three-prong outlet as it probably only has two electrical conductors from the panel box (not three) that extend to it.

On the other hand, agents are far more likely to notice an entire basement that appears to be a newer construction than the original. This is especially true if the home is older, and the basement finish is newer.

The concern with non-original construction is that building permits may not have been obtained from the local municipality. If the construction has not been permitted or not received final approval, it may be considered "illegal" or "unapproved" work. If building permits were not obtained, the seller may need to apply for a permit for the work and/or making sure it receives final approval.

In California, if building permits were not obtained or approved for non-original construction, the unapproved portion of the house must be identified as "unapproved" in the listing.

An important point to remember is that every municipality is different in the way they deal with permits, both in the type of items that need a permit and how in depth they will want to go in the inspection of already completed construction.

In many municipalities, an owner need not take out a permit on items that are not considered significant (e.g., replacing an outlet, replacing a drain pipe under a sink, etc.). Thereafter, the agent may be surprised to find which items a municipality considers significant enough to require a permit. Attempting to evaluate whether or not a municipality requires a permit for the specific non-original work is the place to start. If the municipality would have required a permit for the work, the agent should check to see if any permits were taken out at the time that the agent estimates the non-original work was done. If no permit was taken out, or a permit was taken out but not finalized, there is still work to be done.

The agent may want to notify the buyer that there may be some unpermitted, non-original construction on the property. The agent should suggest that the owner determine whether or not a permit was taken out and finalized on the property for that construction, and encourage the owner to take a permit out immediately and arrange to have the construction inspected and finalized shortly thereafter.

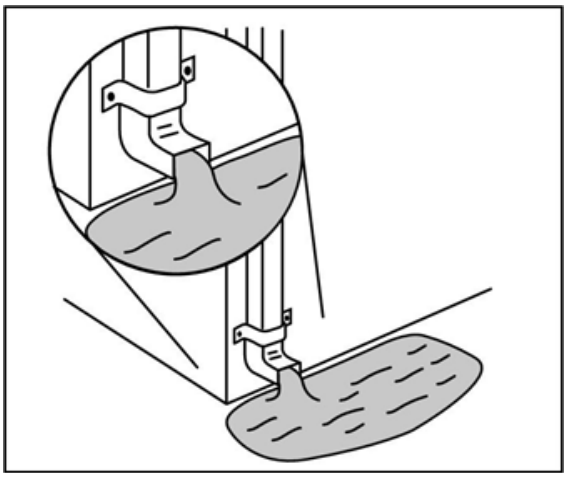
If the agent discovers that some unpermitted, non-original construction exists on the property, the agent should find out how far the municipality expects the owner to go in allowing for full inspection of the construction. The municipality may have the right to require at least some of the drywall be removed to check on the quality of the construction (e.g., electrical, plumbing, framing, and any other construction items that could only be checked with removal of drywall). They may decide, based on the quality of the work they can see, whether or not this is necessary. Some municipalities require full inspection with removal of drywall regardless. It is clearly up to the municipality and the inspectors to decide.

In any event, the agent does want to make sure that significant, non-original construction has been permitted and finalized.

No Extensions on Down Drains

Down-drain extensions are an important component in helping to keep water away from the house. They reduce the risk of foundation settlement and help keep water from penetrating the basement or crawl space (if the house has one). The extensions should reach approximately two feet away from the house. Generally speaking, the extension should be made of the same material as the down drain.

Figure 2.2: Poor drainage due to the absence of down drain extensions.

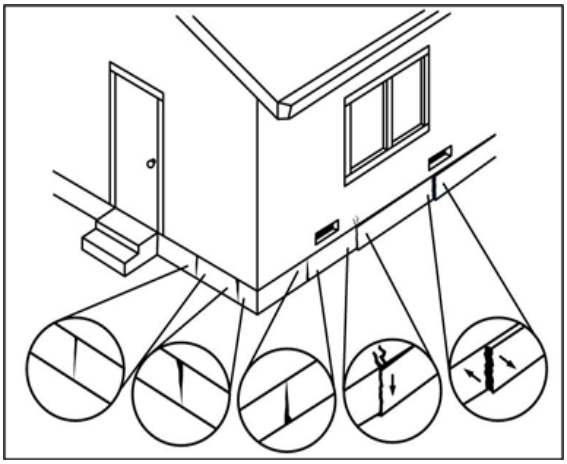


Wood Touching Soil

Wood touching the soil at any point in a home is an "invitation to dinner" for termites. Even in areas where subterranean termites are not a significant issue, wood rot can be a major problem. Building codes typically require up to eight inches of clearance between outside wood and soil.

Foundation Cracks

Figure 2.3: Common foundation cracks.



Minor Cracks

While cracks in a home's foundation that are smaller than 1/8 inch may indicate a settlement in foundations, they are usually only a cosmetic concern. This is a general rule and should not be considered true in all cases. If other circumstances apply (e.g., there is a major cliff close to the house, or the house is brand new), the agent should consider the home to be a possible exception to this rule and recommend that the buyer contact a structural engineer for a complete evaluation.

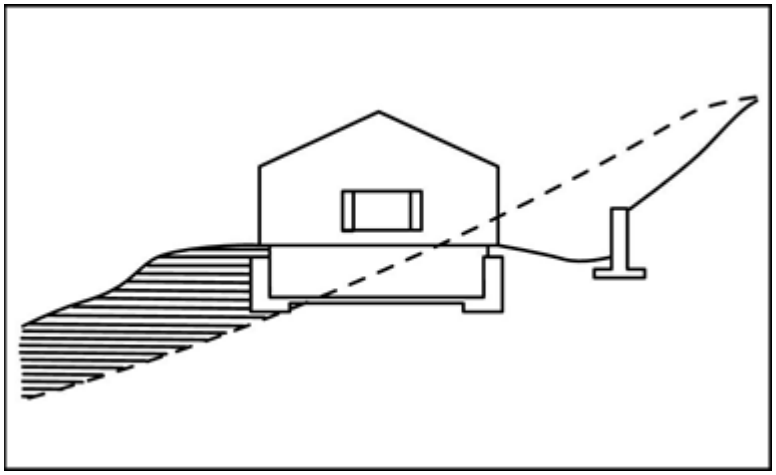
Medium Sized Cracks

Cracks in the foundation that are larger than 1/8 inch but less than 3/4 inch at any point along the crack could be considered large enough to indicate possible structural concerns. Even then, few homes in this category are likely to have a structural problem that represents a risk to occupants. Nevertheless, the agent should advise that the home buyer consider contacting a structural engineer.

Medium or Large Sized Cracks

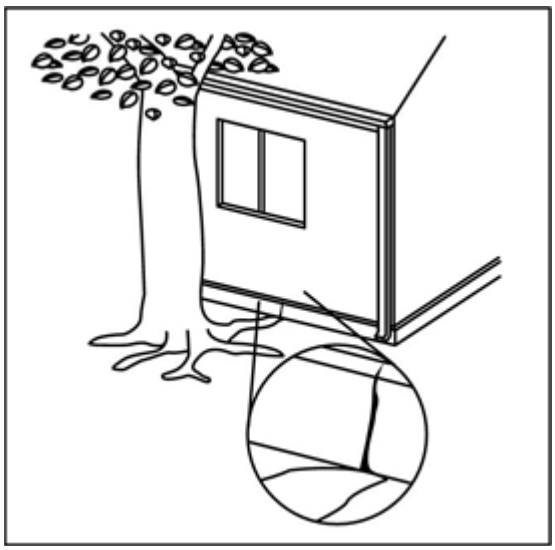
Cracks in the foundation that are larger than 3/4 inch at any point along the crack are large enough to indicate significant structural concerns in a home. While the risk of significant structural problems are possible, the defects are generally not likely to represent a risk to the occupants. Often, these cracks appear because of settlement of fill under or around the house.

Figure 2.4: Filled building pad.



In areas where slab homes are common, it may not be unusual to find a home where the foundation and slab have been raised by a large root from a neighboring tree, thus causing a crack.

Figure 2.5: Foundation damaged and cracked by root system.



Generally speaking, this analysis of cracks for indication of safe habitability of homes is not intended to also evaluate for purposes of earthquake risk. The above categorization of cracks is outside of the evaluation of structural earthquake susceptibility. It should be considered a crude, red-flags indicator, outside of any considerations for earthquake resistance.

A structural defect that is less commonly found is a significantly *out of plumb* wall. As a general rule, if a wall is noticeably out of plumb, it could represent a great enough concern to contact a structural engineer for further evaluation.

Grading

Water seepage into a home is one of the most deplored conditions by homeowners. In all but a few scenarios, down-drain extensions and grading should resolve this problem.

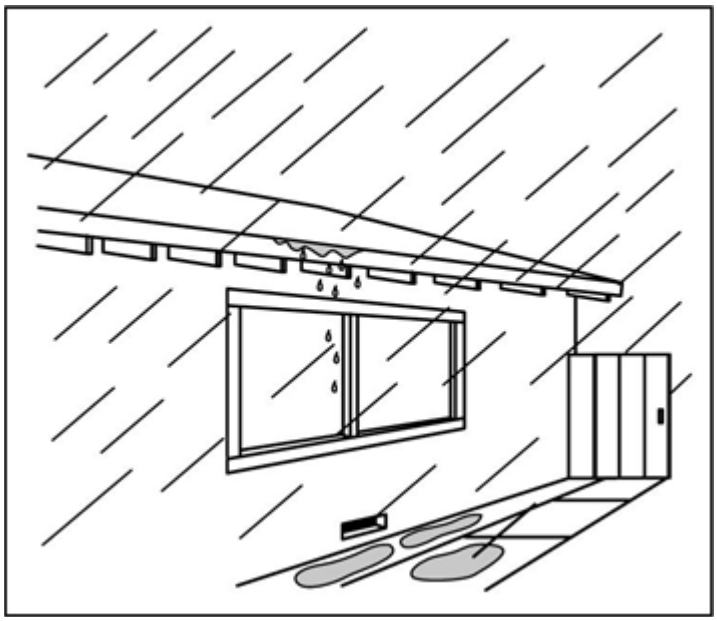
Grading around the Perimeter of the House

The grading of the soil around the outside wall or outside perimeter of the house is very important for helping to keep the water outside, especially if the house has a crawlspace or basement. Nevertheless, perimeter grading is a concern even on s lab homes, because extended water exposure next to the foundation can result in the settling of the slab.

To judge the grading, the agent should observe whether or not the ground noticeably slopes away from the house. If it appears flat or slopes toward the house, then the grading should be corrected. This also includes concrete walks that are next to house and flat, or that slope toward the house.

Inadequate Drainage

Figure 2.6: Uncontrolled roof water and poor surface drainage next to structure.



Of particular concern in homes on hillside lots is the issue of diverting the water around the house from the hillside above. As you might imagine, a great deal of water can end up being collected on the hillsides above homes—so much so that hillside homes are far more likely to end up with water in the basement than other homes are. As a result, it is important to attempt to divert this runoff away from or around the house. While there are many ways to do this, some commonly used techniques can be used to help reduce the risk of water in the basement of a home of this nature.

One of the most commonly used techniques includes simply creating a "swale" or gutter beginning near the midpoint of the yard above the house, and diagonally running the down the hill to each side such that the water that is caught in the swale will be drawn along the swale and around the house.

Another method is to create low spots in the lawn above the house and create an underground drainage system that runs the water out to the street gutter (or rear yard if applicable) as storm drainage. A more environmentally acceptable modification of this method might be to filter the water back into the ground on the downhill side of the lot.

Another concern, primarily directed at hillside homes, involves the risk of landslides. Any depressions or terrain that doesn't seem to follow the terrain around it could be considered a potential risk area. If the agent notices this in any of the areas of the lot, the agent should disclose it to the buyer. The existence of special tarps or covers over sloped soil, or erosion, could also be an indicator of some of these problems.

Trip Hazard on Driveway due to Settling and/or Buckling

Offsets that raise parts of the concrete higher than about 1/4 inch above or below the rest of the concrete around it are possible trip hazards.

Driveway Slopes toward Garage without Adequate Drainage

On some homes, the driveway may slope downhill from the street so the car can be parked in a garage on the basement or crawlspace level. The driveway will naturally collect water and direct it into the garage if there are no methods used to divert the water.

One such method is to collect the water into a drain or drywell at the base of the driveway where it meets the garage. When using this technique, the entire driveway should drain toward the drywell drain. A drywell is simply an opening to an underground space where water can run. It is not unusual for a drywell to be nothing more than a hole large enough to fit a capless, upside-down five-gallon bucket, with a hole in the bucket to serve as an access point for water draining through the drain. Thus, such a drywell has about a five-gallon capacity plus whatever the ground beneath it will absorb. Higher rainfall areas will require larger drywells.

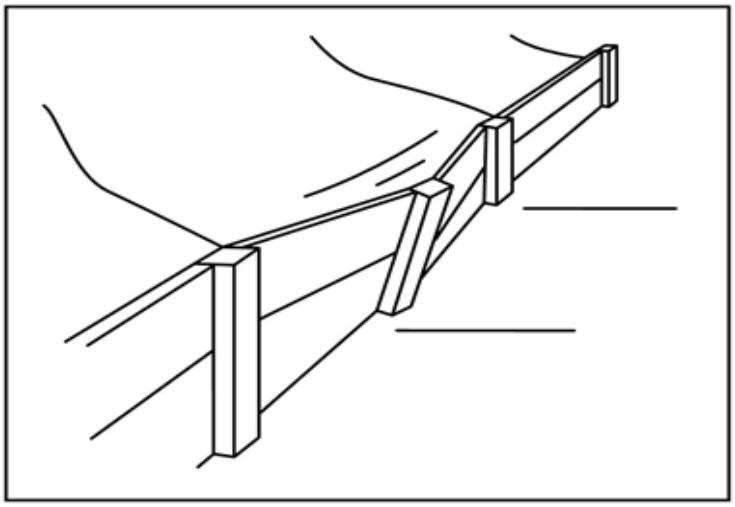
If the house is on a hillside and there is an opportunity for the water to run around the house instead of collecting on the driveway, another such method would be to simply slope the driveway in such a way that all the water from the driveway will run off the outside edge (e.g., onto the lawn and around the house).

Septic Systems

A strong sewage smell indicates a malfunctioning septic system. If the agent detects any waste smell associated with the septic system, the agent should recommend to the buyer or seller that they contact a septic professional to have the system checked.

Retaining Walls

Figure 2.7: Unstable retaining wall.



Retaining walls are usually built of wood, rock, mortared brick, or concrete. A good visual test for determining whether the retaining wall is stable is if it is noticeably out-of-plumb. The higher the retaining wall, the greater the chance that it may be out-of-plumb. In other words, an eight-foot-high retaining wall that is out of plumb to the same degree as a three-foot-high retaining wall represents a greater concern.

Retaining walls are typically very expensive to replace. The more permanent varieties (concrete, mortared brick, etc.) require much more work to demolish and rebuild. One of the easiest retaining walls to rebuild is the "railroad tie" or comparable type. Nevertheless, if a retaining wall is visibly well beyond out of plumb, the agent should recommend that the buyer contact an expert for further evaluation, especially if the wall is high.

Inadequate Window Wells

The upper lip of the window well should be above the grade of the ground around it. In correct window wells, the lip should be above a grade that slopes away from the house. If the grade is flat or slopes toward the house, the agent should notify the seller or buyer of what changes should be made to correct grading.

To prevent water from entering the window well, the ground around it should be intact to shed water. For instance, if a crevasse exists in the ground that allows water to flow under the grade level next to the window well, the window well cannot as easily serve its intended purpose. Other compromises to the dirt or the window well itself (e.g., holes in the window well) also represent a concern.

If the eave of the roof above does not extend beyond the outer edge of the window well below, there is a very high risk that water draining off the roof will drop directly down into the window well, and potentially flood the basement or crawlspace. Use of a rain repelling cover over the window well can help prevent this from becoming a problem.

Another problem that can exist with window wells but does not relate to the function of a window well is the lack of adequate walking space that they may create when they are in a location that will be frequently walked on or around. Examples of this include window wells on the house where the driveway runs along the side of the house, and patios in the rear yard that run up against the house and involve a window well. In these cases, there is a great risk that individuals who are using the area around the window well could inadvertently step into the window well and be injured. Any type of metal grid or grate that can hold a normal adult's weight should be suitable. The agent should be sure that the grate fits over the window well in such a way that the transition from the driveway or patio to the window well does not create a trip hazard.

Faucet Splash Blocks

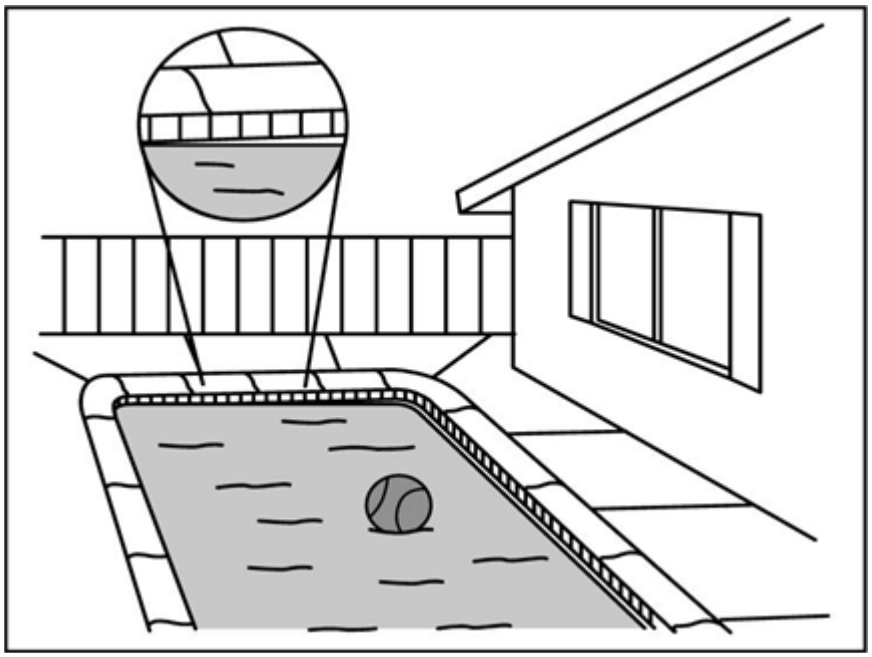
Hose bibs or exterior faucets often drip, whether a hose is attached to them or not, or whether the water is on or off. Also, consider the common prank made by neighborhood kids of turning on a faucet when a homeowner is on vacation: the homeowner returns home to a flooded basement. These are just two reasons to keep splash blocks under rain gutter down drains and exterior faucets to help prevent erosion of the soil, and ultimately water infiltration around the slab into crawl spaces or the basement. More specifically, the splash block should be sloped away from the house and firmly supported so that even the backfill next to the foundation of a new home cannot

settle and change the slope of the splash block.

Splash blocks are often moved accidentally (e.g., Johnny hit the splashblock while mowing the lawn and it now tips the water back toward the house). If the ground next to the house settles, the splash block could end up sending water back toward the house. The agent should check splash blocks for proper placement and orientation to ensure that water flows away from the home. If there are indications that water has been flowing back toward the home, the agent should notify the seller or buyer that a problem may exist.

Swimming Pools and Spas

Figure 2.8: Swimming pool with out-of-level water surface relative to coping.



The level of the water in a swimming pool or spa should be within 1/2 inch of the same level all the way around the pool. If it is not level, a problem may exist. Many pools get minor cracks from setting or shifting soil. The sides and bottom should be free of cracks. If a crack exists, a professional pool inspector should be called.

Barrier Requirements

In many states, a barrier is required between the house and pool (note: *pool* means an in-ground or above-ground swimming pool or other contained body of water that is 18 or more inches in depth, eight or more feet in width, and intended for swimming).

This law aims to impede children's access to their own pools. Likewise, all pools must have a barrier to keep out uninvited neighborhood children. Unless a local code provides otherwise, the barrier must meet the following requirements:

- Entirely enclose the pool area.

- Stand at least five feet high, measured on the outside of the barrier.
- Not contain openings, handholds, or footholds that can be used to climb the barrier. Wire mesh or chain link fences shall have a maximum horizontal mesh size of 1 and 3/4 inches.
- Contain no openings through which a sphere that is four inches in diameter can pass. Horizontal components of any barrier shall be spaced not less than 45 vertical inches apart, or shall be placed on the poolside of the barrier, which shall have no opening greater than 1 and 3/4 horizontal inches.
- Placed at least 20 inches from the water's edge.
- Prevent direct access from the house to the pool.

Air Conditioning Unit(s) Not Level

When an air conditioning unit is not level, it could result in less efficient operation, and many times results in a shorter useful life of the unit. If an air conditioner unit is visibly out of level, then the unit should be checked and leveled.

Exterior Electrical Red Flags

In older homes, there is a stronger likelihood that the telephone pole-to-house wire is of a cloth variety. If you see the cloth cover on this wire fraying like this, notify your buyer of this defect.

Exterior Outlet Not Properly Weather Stripped

Any exterior outlet must be properly weather-stripped to reduce the risk of water infiltration when it is not in use. The most common types of weather-stripped outlets are not suitable for continuous use; they are only intended for temporary plugin (e.g., to plug in a weed whacker, lawn mower, etc.). If there is a need for a plug to be plugged in on a more permanent basis, special housing with a hinged cover must be used.

Exterior Switch Not Properly Weather Stripped

Using an ordinary electrical switch in an exterior location is not acceptable. A special weatherproof switch must be used, and is usually gray in color with a side lever instead of a front lever.

QUIZZES ARE MANDATORY: Please log in and submit the chapter quizzes online.

Chapter Two Quiz

1. Typically, non-original work is more noticeable when:

(a) the work is extensive.
(b) the work is minor.
(c) the work is cosmetic.
(d) the work is incomplete.

2. If non-original construction has not been permitted and approved, the unapproved portion of the house must be identified in the listing as:

(a) partially completed.
(b) pending approval.
(c) unapproved.
(d) under construction.

3. Wood touching the soil at any point in a home is a potential problem because _____ may appear.

(a) mold
(b) fire
(c) water damage
(d) subterranean termites

4. A crack in a home's foundation of less than 1/8 inch is considered:

(a) minor.
(b) medium-sized.
(c) large-sized.
(d) catastrophic.

5. Which of the following conditions may cause water seepage problems?

(a) The ground noticeably slopes away from the house.
(b) A concrete walk next to the house slopes away from the foundation.
(c) The soil is graded so the ground slopes toward the house.
(d) Drain extensions are used to divert water away from the house.

6. A strong sewage smell may indicate a problem with the:

(a) city sewer pipes.
(b) septic system.
(c) storm drainage pipes.
(d) garbage disposal.

7. Which of the following statements is TRUE regarding retaining walls?

(a) Retaining walls are typically very expensive to replace.
(b) The more permanent varieties (concrete, mortared brick, etc.) require much more work to demolish and rebuild.
(c) One of the easiest retaining walls to rebuild is the *railroad tie* type.
(d) All of the above.

8. It is a good idea to keep a splash block under all exterior faucets to help prevent:

(a) erosion of the soil.
(b) animals from drinking.
(c) water waste.
(d) all of the above.

9. The level of the water in a swimming pool or spa should be within _____ of the same level all the way around the pool or a problem may exist.

(a) 1/2 inch
(b) 5 inches
(c) 10 inches
(d) 24 inches

10. To prevent water infiltration, exterior outlets must be properly:

(a) installed.
(b) painted.
(c) weather-stripped.
(d) maintained.

Chapter Three: Roof and Garage Red Flags

Important Terms

combustion gases
detached garage
drywall
evaporative coolers (swamp cooler)
fire rating
junction box
masonry
rafter
rolled roofing
roof decking
shingles
solid core door
trip hazard
truss

Learning Objectives

Upon completion of Chapter Three, you should be able to complete the following:

- Identify the most common roof problems.
- Identify trip hazards in and around a home.
- Identify fire hazard issues between the home and garage.
- Identify power supply hazards to the house and garage.
- Test the auto-reversing mechanism on an automatic garage door.

Roof Red Flags

Three or More Layers of Shingles

The maximum number of layers of roofing material allowed on a roof may vary depending upon the regular roof loads expected in a given area and other factors. In many areas of the northeast, only two layers of roofing are allowed on the roof. In other areas of the country, it may be three. The agent should find out from the municipalities in his or her area how many layers are allowed. If there are three or more layers of shingles on the roof, it may require removal of at least one layer of shingles before applying a new layer.

Check at the eaves or lowest edge of the roof to determine how many layers of roof material are on a roof. At the eaves of roofs, roofers typically install two shingles for each full layer of shingles on the roof. Thus, the agent will expect to see four shingle edges at the eave if the roof has two layers of shingles on it, and six shingle edges if it has three layers.

Sagging Roof Decking

Sagging roof decks most commonly occur on homes that have a raftered structure, versus those that have the more modern trussed structure. Thus, severe sagging in roofs is most likely to be found in houses that were built before 1970. It would be unusual to find significant roof deck sag in a house with a truss roof structure, unless some trusses have been cut.

To evaluate roof deck sag, the agent should stand on the ground and line up his or her eyes with the plane of the roof deck. The agent should be oriented so that the eaves and the ridge are very close to being lined up with his or her line of vision. In general, if the agent estimates the deck sag to be more than a couple of inches, he or she should probably recommend that the buyer consider having the roof evaluated by a structural or civil engineer or framing contractor. It is not uncommon to see six or more inches of sag in raftered roofs that have split rafters beneath the deck.

Cracked Shingles

This usually means the shingles are beyond approximately the midpoint of their useful life (usually a watch situation.)

Missing Shingles

If some shingles are missing some granules, this may indicate that the shingles are approaching the end of their estimated remaining useful life. There are a number of defects on asphalt shingle roofs that deserve attention if they exist. If the shingles are cracked, even in a hairline fashion, they probably have at least passed the midpoint of their useful life; they may be older than the midpoint. Most asphalt shingles will last at least 15 years unless they are defective or of very low quality. When the agent sees the small granules on the asphalt shingles starting to detach (missing granules), then the life of the shingles is most likely less than five years. Of course, if the granules are missing in a very noticeable way (e.g., large areas of the roof look black from the extensive loss of granules), the roof is at the end of its useful life. Also, if a shingle appears to be missing here or there, then those shingles should be replaced as a partial repair.

Rolled Roofing

If the home has any rolled roofing over the living space, the buyer should expect to replace the roof within the next five years, even if it is new rolled roofing. Rolled roofing is essentially an asphalt-shingle material on a roll. It is usually made of granuled tar paper on a roll that is about 36 inches wide. Rolled roofing generally has a useful life of 5–10 years.

Checking Doors and Windows

A quick check of the home's doors and windows can lead to substantial energy savings. Failed weather stripping and deteriorating caulking around the framing and edges of doors and windows can allow hot air to escape and cold air to seep in. In addition, they can allow water to leak into the home, leading to wood rot and other problems. The agent should check the wood window framing and sills for damage, and point out any problems out to the principal.

Deteriorating Chimney Masonry

It is very common to see deteriorating chimney masonry on homes, especially those without a red tile interior protection. Of course, this can be a danger to someone who is passing by the chimney and may prevent the chimney from drafting combustion gases properly.

Evaporative Cooler Red Flags

Combustion Vents below Evaporative Cooler Top

If the seller lives in an ar ea that is very arid in the summer, the seller may be us ing evaporative/swamp coolers. These simple and less expensive window or rooftop cooling units only work in low-humidity areas. These coolers draw the air from outside into the fan compartment inside. Thus, they draw air into themselves and then into the house. If a combustion vent for a furnace or water heater is close enough to a swamp cooler, the cooler could draw low-oxygen, high-carbon-dioxide air into the house. Thus, any combustion air vents should be at least 10 feet horizontally from the swamp cooler and at least two feet above the top of the swamp cooler.

No Evaporative Cooler Overflow Drain

This could result in significant damage to the roof below the evaporative cooler. A swamp cooler has a water reservoir in its base. Virtually every swamp cooler leaks at least some water out of this connector at some time during its life. The problem here is that the water that leaks from the swamp cooler can completely ruin the roof underneath it. Therefore, the attachment of a simple $10 hose could help avoid expensive roof damage. In fact, the water reservoir usually has a hose thread connection on it. The hose should be connected to the overflow connector on the cooler and the other end of the hose should run over the edge of the roof or into the rain gutter.

Red Flags in the Garage

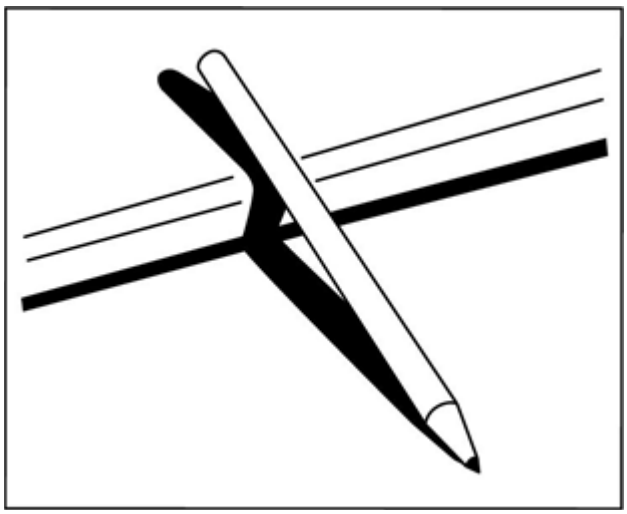
Wood Touching Soil at the Garage Foundation, Exterior Wall, or Covering

This issue is essentially the same issue as mentioned in Chapter One in regard to wood siding on a house. Wood should be six to eight inches from the soil in order to be cost effective. This applies

to attached or detached garages as well as to the exterior siding on the living space.

Trip Hazard on the Garage Floor

Figure 3.1: Trip hazard test.



Any offsets in the floor of 1/4 inch or more are considered trip hazards and should be identified for the buyer for possible correction, and for prevention of injury while the buyer occupies the house. One way to check for trip hazards is to place a pen or pencil over the expansion joint between garage floor slabs or over a crack. If the pencil is at a noticeable angle, a trip hazard probably exists there.

Fire Wall between the House and Garage Is Not Continuous on the Garage Side

Garages typically must have an intact fire separation between them and the house. In most cases, this means there is drywall attached on the garage side to completely protect any walls between the house and the garage.

The common wall between the house and the garage should have a continuous drywall surface on the garage side all the way up to the bottom of the roof deck, unless the entire ceiling in the garage is covered with drywall. While this typically means that the drywall must be taped at the joints, many pre-1970s homes will not have joint compound or tape at the joints. The agent may suggest to the owner to have existing drywall taped.

No Metal, Fire-Rated, or Solid-Core Common Door between the House and Garage

Garages are known to be an area of high fire risk. Doorways between garages and the living spaces in homes represent one easy method for fire to reach the inside of the home from the garage. The existence of a metal or solid core wood door in the doorway between the garage and the house can create a significant block to fire spreading into the house. If the door is not a heavier wood door or a metal-type door, it is not likely to have an adequate fire rating. The agent should indicate to the buyer that the door may not have an adequate fire rating.

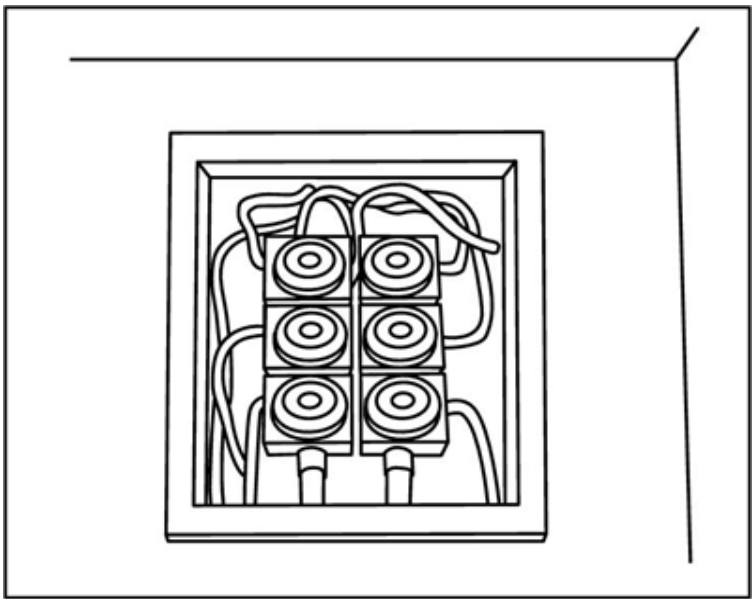
Any door at the garage-house doorway that does not automatically close is not providing as much fire protection for the house as it otherwise could. Thus, whether the door is a fire door or not, if the door does not completely shut automatically, the buyer should be told that this is a missing safety feature.

Out-of-Plumb Garage Walls

In many homes that were originally built with a detached garage, the garage leans to one side or the other when viewed from the front. While this is typically due to an inadequate nonliving-space structural design from an earlier period, this can often be repaired with very little cost when compared to demolishing and building a new garage. Nevertheless, such work should be completed by a competent building contractor. The buyer should be notified if the building is noticeably out of plumb.

Exposed Wire Connections

Figure 3.2: A junction box without a cover is a hazard.

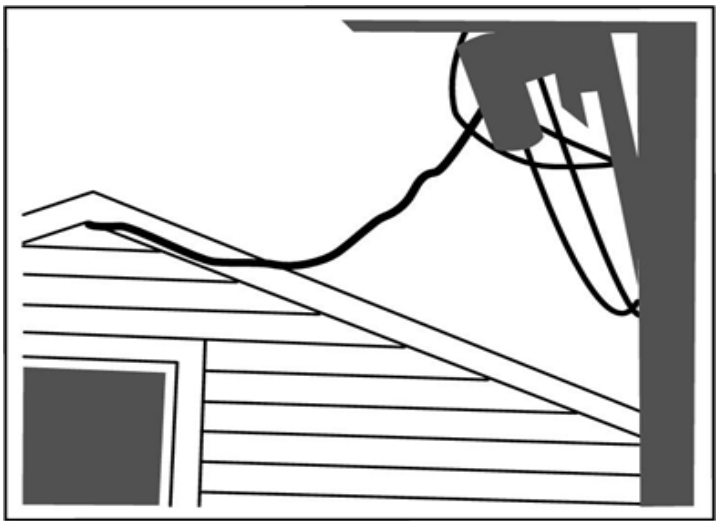


Electrical junction boxes allow for a protected wire connection within them. Often, these junction boxes do not have covers screwed onto them. Instead of protecting the wire connections, they tend to expose them. All junction boxes with wire connections in them should have a screwed-on cover that fits the box.

Detached garages were typically built in a time that did not warrant providing wiring to the garage. As time passed and people began to require electricity in their garages, many such detached garages were provided with electrical service in a less-than-professional manner. Many detached garages have a wire running to them from the house that may not be of an exterior grade. Since many of these wires have long become faded in the sun, it is nearly impossible to read any identifying marks on the wire to determine whether or not it is exterior rated. The agent should notify the buyer of the possibility that the wire may not be of an appropriate exterior grade.

Wires to the Garage Are Too Low to the Ground

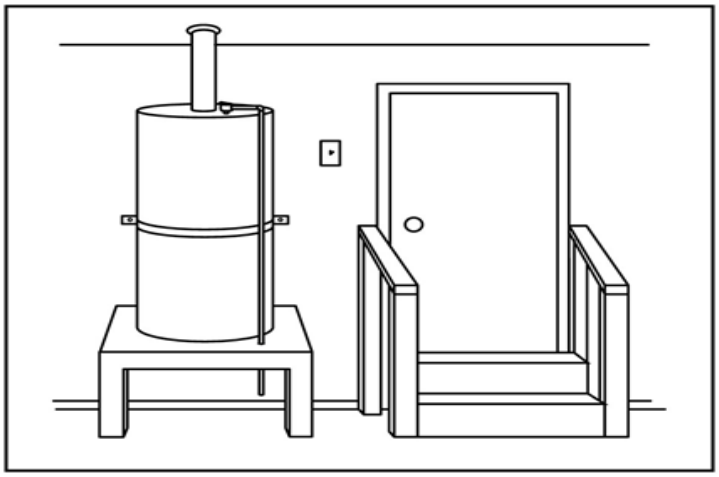
Figure 3.3: Wires too low to the ground.



Garage-to-house wires can also represent other concerns. If the wire to the garage from the house does not clear at least 10 feet from the ground below, it would probably be considered too close to the ground for a safe clearance. Usually the best way for the agent to quickly evaluate the height is to estimate how far the wire is from the top of his or her head and then add his or her height (a height that the agent already knows) to that extra height to determine an approximate total height from the ground. If the agent finds that the clearance is less than 10 feet, he or she should disclose to the buyer that the wire from the house to the garage may be unsafe. The agent should never touch these wires with his or her hands, a tape measure, or any other object.

Gas Water Heater in the Garage

Figure 3.4: Gas water heaters in the garage should be mounted on a platform that is at least 18 inches off the floor.



Gas water heaters that are located in the garage should be mounted on a platform that is at least 18 inches off the floor. Most building codes require that the pilot flame of a water heater in the garage be a minimum of 18 inches from the floor to minimize the chance of pilot light igniting gasoline fumes that are near the floor. Many states require a seismic safety strap to hold the water heater erect in the event of an earthquake, and energy blankets to minimize heat loss. Buyers and sellers should be informed about missing safety precautions for gas water heaters in the garage.

Garage Door Opener Does Not Auto-Reverse

Automatic garage door openers began to be commonly used in the 1960s. When they were first manufactured, many openers did not have an important safety feature: an auto-reversing mechanism. This mechanism automatically reverses a closing garage door when adequate pressure is exerted against the closing door (e.g., a dog or small child who is caught under the door while it is closing). With the addition of an auto-reversing mechanism, automatic garage doors have become more safe.

Adjusting an Auto-Reversing Automatic Garage Door

Sometimes, an automatic garage door opener does auto-reverse when a little pressure is placed upward on the closing door, but only when an exorbitant amount of pressure is used. Generally, an automatic reversing mechanism should reverse with very little pressure. Remember, we are trying to protect individuals as small as a toddler; they could potentially suffer major injury if the reversing mechanism did not reverse in time to keep from crushing their fragile bones. Thus, only if the auto-reversing safety mechanism reversed with very little pressure would the agent consider it adequately adjusted. If more pressure is required to reverse the door, the agent should tell the buyer that it needs adjustment.

QUIZZES ARE MANDATORY: Please log in and submit the chapter quizzes online.

Chapter Three Quiz

1. Severe sagging in roofs is most likely to be found in houses that were built before:

(a) 1950.
(b) 1960.
(c) 1970.
(d) 1980.

2. Deteriorating chimney masonry may cause a danger because:

(a) pieces of masonry may fall on someone passing by below.
(b) this may prevent the chimney from drafting combustion gases properly.
(c) Both (a) and (b) are correct.
(d) Neither (a) nor (b) are correct.

3. Any offsets in the floor of ____ or more are considered trip hazards and should be identified for the buyer for possible correction.

(a) 1/4 inch
(b) 1/2 inch
(c) 1 inch
(d) 2 inches

4. Which of the following represents an easy method for fire to reach the inside of a home?

(a) Railroad-tie retaining wall.
(b) Doorways between the garage and living spaces.
(c) Poorly designed landscaping.
(d) An old water heater.

5. All electrical junction boxes should have:

(a) a permanent cover welded to them to protect children.
(b) warning labels designed to alert homeowners.
(c) a screwed-on cover that fits the box to protect the wires.
(d) clear plastic covers to allow the exterior viewing of wires.

6. To be considered safe, garage-to-house wires must be at least:

(a) 8 feet from the ground.
(b) 10 feet from the ground.
(c) 12 feet from the ground.
(d) 15 feet from the ground.

7. Gas water heaters should be elevated from the ground to:

(a) protect against flood waters.
(b) prevent animals from reaching the pilot light.
(c) keep the pilot light out of the reach of children.
(d) prevent gasoline fumes from being ignited by the pilot light.

8. Gas water heaters in the garage should be mounted on a platform that is at least ____ inches from the ground.

(a) 18
(b) 12
(c) 10
(d) 8

9. To protect pets or small children from being caught under the garage door while it is closing, garage door manufacturers now include an:

(a) auto-reversing mechanism.
(b) automatic spring detachment mechanism.
(c) emergency trapped alarm.
(d) emergency button on the remote.

10. An auto-reversing mechanism should reverse the garage door:

(a) when an exorbitant amount of upward pressure is exerted on the door.
(b) when very little upward pressure is exerted on the door.
(c) when the weather strip touches the garage floor.
(d) when the safety beam is broken.

Chapter Four: Interior Red Flags

Important Terms

three-way switch
baluster
creosote
egress point
lead-based paint
riser
shower pan
stairwell

Learning Objectives

Upon completion of Chapter Four, you should be able to complete the following:

- Recognize potential problems with stairs and railings.
- Explain smoke detector requirements.
- Identify proper egress points in case of fire.
- Test kitchen appliances and identify potential problems.
- Recognize potential problems with fireplaces and stoves.
- Recognize bathroom red flags and hazards.

General Interior Inspection

Possible Peeling Lead-Based Paint

If a house was built before 1960 and has peeling paint on the inside, there is a significant risk that the paint is lead-based. If the house has peeling paint on the outside and was built before about 1980, the paint has a significant risk of being lead-based. If peeling paint exists under these circumstances, the agent should notify the buyer of the possibility that the peeling paint could contain lead and therefore represent a potential hazard. The buyer may want to order a lead-based paint test. Only a laboratory test can confirm the presence or absence of possible lead-based paint. Additionally, don't forget about the federal disclosure requirements.

Floor Sags or Is Not Level

Floor sag or out-of-level flooring is often an indicator of settlement in the home. If the agent can noticeably tell that the flooring is sagging, the agent should inform the buyer so that the buyer can decide whether or not further evaluation is needed.

Ceiling Stains

If stains are visible on the ceiling of a home, this could be an indicator of a leaking roof from the bathroom or kitchen above. While it is difficult to tell whether the stain was from a previous or current leak, it is still a good idea for the agent to notify the buyer of the stain.

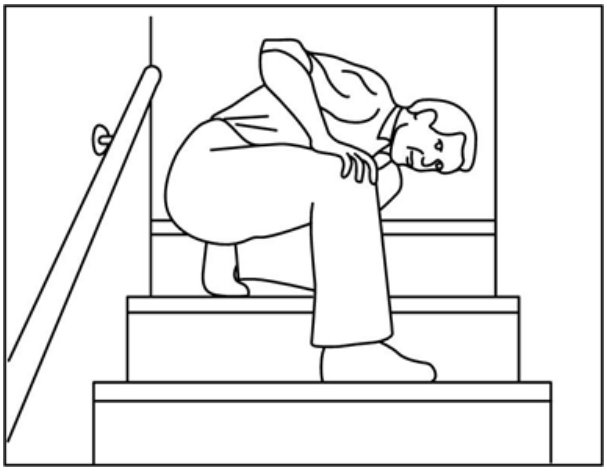
Inappropriate Wiring

Lamp cord should never be used in a permanent wiring system. However, lamp cord is sometimes used to add an outlet to a wall, etc., especially in pre-1960s homes. If the agent notices lamp cord being used in such a manner, the agent should disclose to the buyer that lamp cord is being used as permanent wiring in the house where it shouldn't be used.

Stairs and Trip Hazards

Stairways represent some of the most significant risk areas in a home. Non-uniform stairs are potential trip hazards. When a person misjudges a stair, that person may potentially trip and fall. The quickest way for the agent to check stair uniformity is to begin from the top of the stairs. The agent should look down the nosings and line them up as well as possible. If they don't line up closely enough to be considered uniform, they represent a trip hazard. Building codes may allow up to a 3/8-inch difference from one step to another in riser height or tread to be considered uniform. Some experts say it should be as little as 1/4 inch. The *line-of-sight* test just explained does not definitively tell the agent whether or not the steps are truly uniform; only a careful measurement of each step can accomplish that. Nevertheless, lining up the nosings to look for deficiencies is a very cost-effective approach to identifying some of the most dangerous stairway defects in a home.

Figure 4.1: Checking stair uniformity.



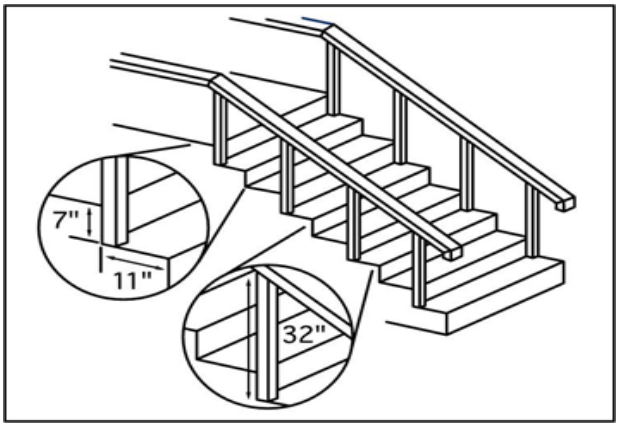
While some building codes allow as narrow a tread as 9 inches, many experts believe the safest tread depth is a minimum of 11 inches. This minimum exists so that the majority of people who use the stairs can fit all or most of their foot on the tread. If the stairs appear uniform, as per the previous test, then measuring just one or two treads per set of stairs would probably represent all of the stairs. Most experts recommend a 7-inch maximum rise and an 11-inch minimum tread.

Railings

Stair railings serve multiple purposes. First, they help individuals safely walk up and down a set of stairs. Rails also help reduce injury if a person were to trip and begin to fall. An individual is far more likely to keep from falling and injuring themselves if that individual has a railing to grab on to.

If a rail is missing from a set of stairs, this would be considered a deficiency. Building codes require that a rail be provided on any set of stairs with as few as two steps. Other building codes and some stair experts suggest that rails should be provided on stairs that only have one step. The reason for this is that a person is less likely to expect a step up on a one-step system because there is no rail. Thus, in this case, the rail is a signal to the walker that a step lies ahead.

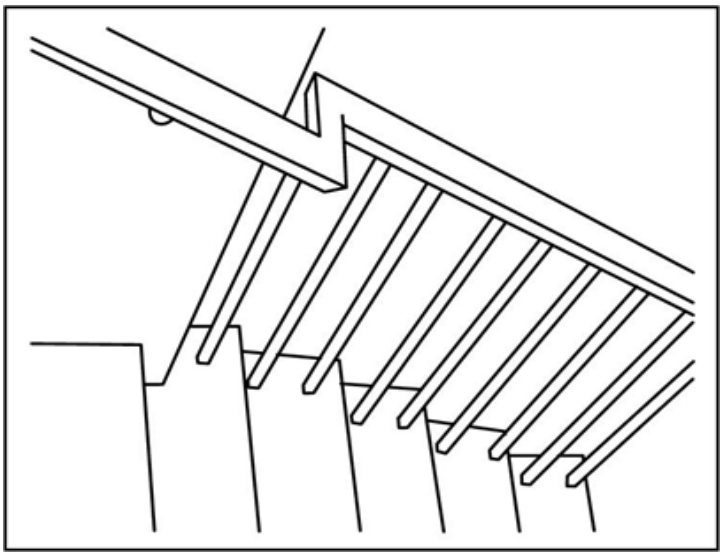
Figure 4.2: Typical stairway and railings.



Rails should be fully graspable. If a person cannot fully grasp around a rail so that at least the tips of their fingers touch, it is likely that the rail cannot prevent a serious fall once a trip occurs. The agent should inspect each railing in the house to see whether the tips of his or her fingers touch while grasping the rail. The agent may even consider recommending child-level rails on all stairs if the buyer is likely to have smaller children in the family. Of course, the agent would want to make sure that these child-level rails are fully graspable by all the children who may use them.

A stair rail that does not provide a continuous run from the top to the bottom of the flight of stairs can also constitute a problem. If a flight of stairs has two rails—one that is along the wall where a wall exists, and another that completes the flight where the rail is in an open area (i.e., no wall to attach to) and only anchors via balusters to the steps, there will typically be a break in the continuity of the rail where the transition of the wall-attached rail to the step-attached rail occurs.

Figure 4.3: Stair rails should provide a continuous run from the top to the bottom of a flight of stairs.



Loose rails can also constitute a risk in a number of ways. First of all, a loose rail may be on the verge of breaking. Thus, a loose rail may not be capable of handling the weight required if a person had to use it to catch themselves in the event of a fall. Furthermore, a loose rail cannot provide the accurate guide for a walker that a tight rail can, since it will move around rather than stay firm in its location.

The agent should notify the buyer if these defects with these items are present inside or outside of the house. Remember, stair-and rail-related items can be some of the most important concerns in the home.

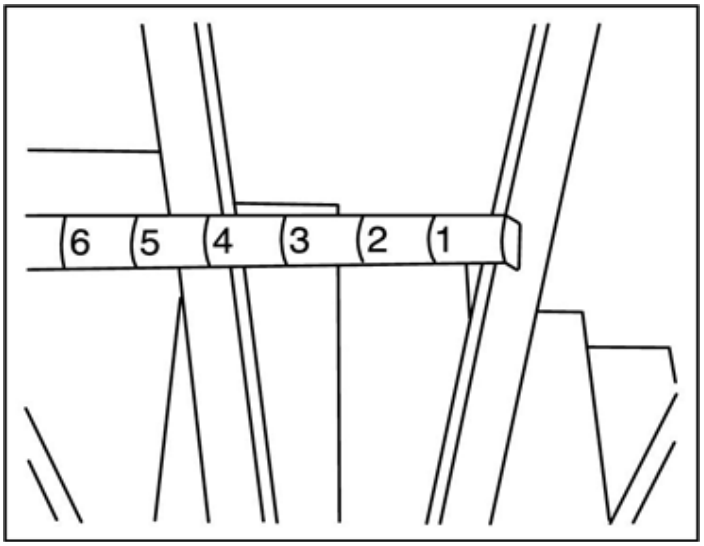
Stairwell Red Flags

Baluster Spacing

Balusters are the vertical poles that typically hold up a railing. Balusters should not have a gap of more than about 4 inches. Notice that we are dealing with gaps between the balusters, not the

center-to-center length between each of the balusters. The agent should use a measuring tape to check the widest gap between a few of the wider-gapped balusters. If the agent uses his or her fist (the average adult fist measures 3–4 inches in width), the agent may be able to easily estimate baluster widths if a measuring tape isn't handy.

Figure 4.4: Baluster spacing.



Stairwell Lighting

Another stairway issue is inadequate lighting over stairs. Every stairwell should be well lit along its entire length. This can usually be accomplished by a single light in the middle of the stairwell on half flights, or two or three lights on longer stairwells (i.e., one full flight of stairs that rises 9 feet in elevation).

There should also be a *three-way switch* at both the top and bottom of the stairs so that no matter which direction a person is coming from, they will be able to turn on the lighting for the stairwell. A three-way switch allows the lights to be turned on or turned off at either of the two switches. If the stairs do not have a switch at both the top and bottom of the stairs that turns the lights on and/or off, the agent should disclose this to the buyer as a possible safety issue.

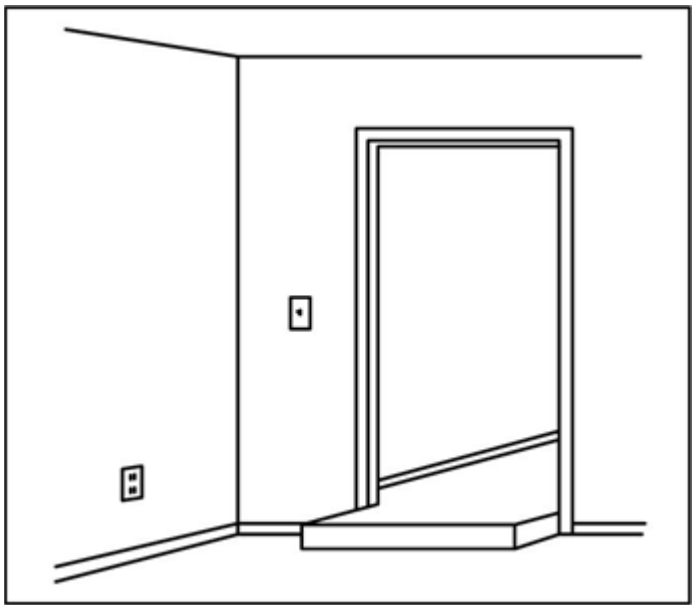
Stairwell Headroom

It is not uncommon in pre-1970s homes to find that the stairs to the basement (if there is a basement) have insufficient headroom at some point along the stairway. Poor headroom is typically found at the base of the stairs. Code for new construction requires that the headroom—the measurement directly vertical from the floor or stair to the ceiling—be at least 80 inches. However, it would probably not be feasible to require all stairways to basements be 80 inches in existing homes, especially if the basement is being used as storage only. If the basement is being used as a normal living space or the stairwell has questionable headroom, a good cutoff height for minimum headroom on an existing home is probably around 74 inches to provide for most of the US population.

Hazardous Steps

Short steps also represent a potential trip hazard. Many experts would define a short step as one that is 5 inches high or shorter. This step height is also called the *riser height*. Short stairs and steps are also an indication of an illegal addition.

Figure 4.5: A hazardous step.



Torn Carpet

Torn carpet represents a trip hazard on a normal, flat floor, and it represents a more significant hazard when on stairs. The agent should always be aware of deteriorating coverings on stairs, including other types of covering besides carpet. For instance, if the linoleum on a set of stairs was torn or cut on the edge of the nosing, this could also represent a trip hazard. Any tears or cuts of any material can add risk to people who walk on the set of stairs. If the cover material or the step itself is projecting above the rest of the surface of the stair, that represents an additional tripping hazard.

Smoke Detectors

The minimum standard recommended for smoke detectors is to have at least one operating smoke detector in a central location outside of each sleeping area. This means there must be a smoke detector in each hall outside of a bedroom area. At least two smoke detectors are required in a two-story home with bedrooms on each level.

If there have been additions, repairs, or alterations to the property, each bedroom should probably have a smoke detector in addition to the hall detectors mentioned above. Furthermore, existing dwellings typically only utilize battery-operated smoke detectors, while new constructions typically utilize hard-wired smoke detectors with battery backups.

Many state laws require that smoke detectors be installed in existing *dwelling units* as well as new constructions, new additions, alterations, or repairs. The seller of a single-family home may also be required to deliver to the buyer a written disclosure statement indicating that the property is in compliance with state law concerning smoke detectors.

Egress Points

It is important to have a method of escape from bedrooms in the event of a fire. Usually, the window offers the best opportunity for escape. However, if the sill of the window is too high above the floor, it is difficult for most people to escape through the window. Basement bedroom windows, common in homes built prior to 1970, tend be the most common culprits for this defect. If the sill or bottom of the bedroom window is more than 44 inches above the floor, the agent should notify the buyer of this defect. While it may be costly to rebuild windows to satisfy this requirement, some buyers may decide that the room in question will not be the one they use as a bedroom.

Inspecting the Kitchen

Areas of concern in the kitchen include insects, rodents, and appliance and floor problems. The agent should open kitchen cupboard doors to look for signs of roaches or rats, and check the appliances to make sure that they all operate. Are there enough electrical outlets? Is the floor stable and level? Check for the following specific red flags:

Sink Disposal

One of the most common kitchen-appliance problems is a food waste disposal that may be going out. Waste disposals usually sound very rough when the bearings in them are becoming worn. The agent should turn on the water to the sink that the disposal is built into before and during the test. If the disposal sounds very noisy, the agent should inform the buyer that the disposal may be on its "last leg."

Refrigerator

The agent should check the frozen compartment of the refrigerator to see if there is frost, ice, or frozen goods in it, and check the main refrigerator compartment to see if it feels cool on the wall of the compartment.

Range and Oven

The agent should check the range top to see if the burners or elements are operating properly. There should be no items sitting on any of the elements before the agent turns them on. The agent should also check the oven by turning on the bake or the broil option to make sure that they operate properly. There should be no items inside the oven before turning it on. The agent must remember to turn off all of the elements on the oven off before going on to other things, and check the exhaust hood above the stovetop by turning the knob or switching the settings to see that the fan and light work.

To test a microwave, the agent can place a glass of cold water inside the microwave and turn it on for a minute or two, and then check to see if the water is hot. The agent should also check to see

that the light turns on when the door is opened.

Dishwasher

It is very difficult to completely test dishwashers. If some dirty dishes are available, the agent should set them on the top shelf and run the dishwasher, and check to see if they are cleaned by the time the agent prepares to leave. Additionally, the agent should check the floor around the dishwasher for signs of leaks.

Trash Compactor

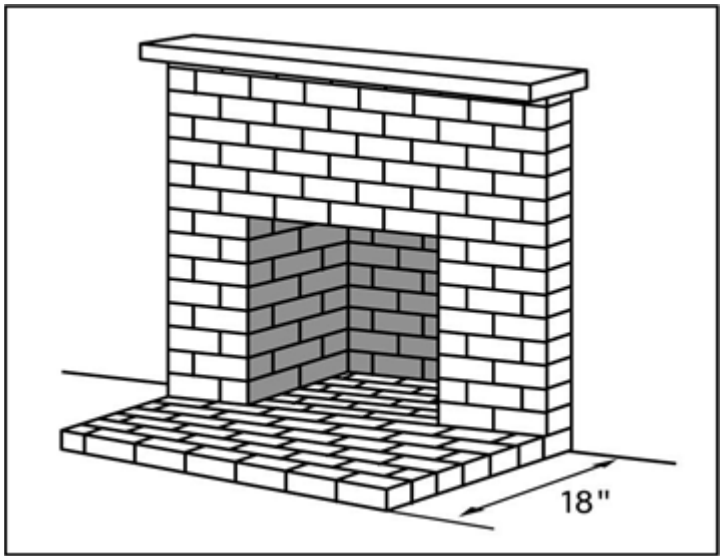
The best way for the agent to test a waste compactor is to place some additional trash in it (e.g., a piece of newspaper). After the agent runs the cycle, he or she should check to see if the paper or trash has been crushed. The agent should then inform the buyer or seller if any problems with kitchen appliances have been identified.

Solid Fuel Stoves and Fireplaces

Open Cracks

Open cracks in a fireplace can be an indication of serious settling and can be a safety hazard. If there are noticeable cracks in the fireplace, the agent should suggest to the buyer or seller that they contact an expert to perform a complete inspection of the fire box and chimney. Additionally, the hearth on most wood stoves or fireplaces must extend 18 inches or more from the front of the fireplace. The absence of a hearth or one that does not extend the correct distance is a fire hazard.

Figure 4.6: Noticeable cracks in the fireplace.



Creosote Buildup

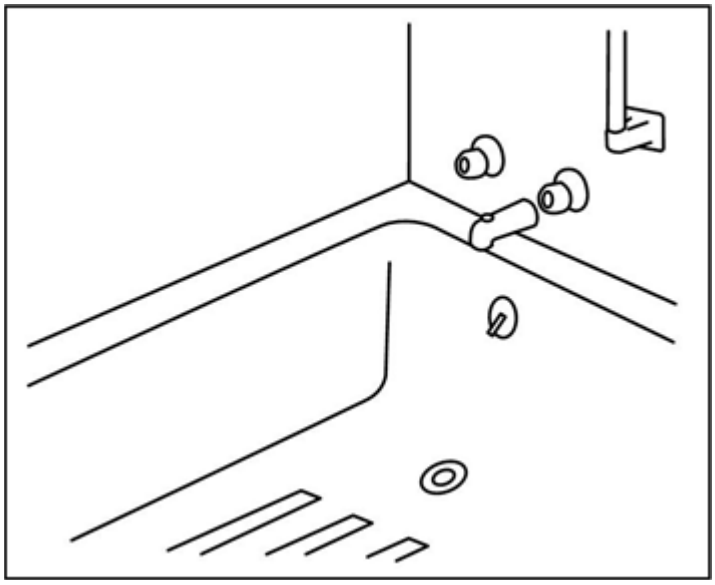
Creosote buildup on fireplaces or wood stoves can cause chimney fires. If the wood stove, coal stove, etc. does not have anything burning in it at the time, the agent should open up the door and see a buildup of charcoal-like creosote on the walls or ceiling of the stove box or fireplace exists. If it is noticeable, it probably needs a cleaning. Creosote buildup that is about 1/8th inch thick or more in the fireplace is a safety hazard.

Bathroom Red Flags and Hazards

Slip-Resistant Material

The combination of water and slick tile floors can be a dangerous hazard. Bathroom floors are likely to be very slippery after a bath or shower, and may result in an increased chance of a fall. The application of textured strips or non-skid mats on the floors of tubs and showers can significantly reduce the risk of a fall. Rubber mats that secure to the floor by way of suction cups can also be effective in reducing falls.

Figure 4.7: Tub or shower with slip-resistant material and safety handholds.



Safety Handholds

Safety handholds in the bathroom can significantly reduce the risk of slipping and falling in or around tubs and showers. Typically, these handholds are oriented vertically and are secured to the wall in a sturdy fashion. Since handholds are usually not required by code, they will rarely be properly installed. If the tub or shower does not have handholds, or they are not properly installed, the agent should let the buyer know about these defects.

Tub and Tile Needs Grouting or Caulking

It is very common to find that the tile or other waterproof wall material above tubs is not well caulked where it meets the tub. This represents a concern for water seeping behind the tub, etc. If the agent notices this defect, he or she should notify the buyer.

Shower Pan Leak

Tile or concrete floor showers need to have a special seal under the tile or concrete to drain water into the drainage system. This seal is typically referred to as a *shower pan*. If the tile or concrete shower does not have a shower pan or it has deteriorated, water can leak down to the ceiling below. To check for shower pan leaks, the agent should check for stains on the ceilings below the locations of showers. If the house was built before 1970 and has a true tile shower (not a tub/shower combination), the shower pan should be checked by a professional, and the agent should disclose this issue to the buyer.

Tape Wrapped on Sink Drain

If tape is wrapped around the drain pipes underneath sinks in the house, this almost assuredly means that the pipes are leaking, and the agent should notify the buyer of this defect.

QUIZZES ARE MANDATORY: Please log in and submit the chapter quizzes online.

Chapter Four Quiz

1. The quickest way to check stair uniformity is to use the:

(a) "plumb bob" test from the bottom of the stairs.

(b) "line-of-site" test from the top of the stairs.

(c) "vaulting test" by running up and down the stairs.

(d) "riser height" test by measuring each and every stair riser.

2. Which of the following is considered a stair rail deficiency?

(a) A rail is missing from the set of stairs.

(b) A person cannot fully grasp around the rail so that at least the tips of their fingers touch.

(c) The stair rail does not provide a continuous run from the top to the bottom of the flight of stairs.

(d) All of the above.

3. While using a measuring tape to check the widest gap between stair banisters, you notice that they are 10 inches apart. This condition is considered:

(a) acceptable. (c) borderline.

(b) Unacceptable. (d) close, but safe.

4. Which of the following is CORRECT regarding stairway lighting?

(a) Every stairway should be well-lit along its entire length.

(b) There should be a three-way switch at both the top and bottom of stairs.

(c) Both (a) and (b) are correct.

(d) Neither (a) nor (b) are correct.

5. Which of the following represents a potential trip hazard?

(a) Short steps (short riser height).

(b) Torn carpet at the edge of the nosing.

(c) Plastic carpet cover that extends above the rest of the stair surface.

(d) All of the above.

6. Windows are often too high to be used as a method of escape in the event of a fire. Which room's windows tend to be the most common culprit for this defect?

(a) Kitchen windows.

(b) Upstairs bedroom windows.

(c) Basement bedroom windows.

(d) Family room windows.

7. Which of the following should be checked on ranges and ovens?

(a) The burners and/or elements.

(b) The oven's bake and broil functions.

(c) The exhaust hood above the stovetop.

(d) All of the above.

8. If you notice a thick buildup of charcoal-like material in a wood burning fireplace, it is probably:

(a) oil.

(b) creosote.

(c) tar.

(d) paint.

9. While inspecting bathrooms, one should look for:

(a) Non-skid strips or mats on the floors of tubs or showers.

(b) Safety handholds in showers or tubs.

(c) Adequate grouting or caulking where the wall meets the tub.

(d) All of the above.

10. Tile or concrete floor showers need to have a special seal under the tile or concrete to drain water into the drainage system. This is called:

(a) flashing.

(b) a "P" trap.

(c) a shower pan.

(d) sheathing.

Chapter Five: Red Flags in the Major Mechanical Systems

Important Terms

breaker
breaker panel
carbon monoxide
carbon dioxide
flue
heat exchanger
HVAC
“P” trap
pressure release valve
solder

Learning Objectives

Upon completion of Chapter Five, you should be able to complete the following:

- Identify red flags in the major mechanical systems of a home.
- Recognize general electrical red flags.
- Examine an electrical panel and identify potential problems.
- Explain water heater bracing and disclosure requirements.
- Recognize an improperly anchored water heater.

General Plumbing Red Flags

Another important area that the agent should check for red flags is the plumbing system. Some concerns include insufficient water pressure, clogged drains, and corroded pipes. Check all of the plumbing fixtures in the house. Do the faucets flow? Do they drip when turned off? Do the sinks drain? Do the toilets flush? Are there signs of leaks under sinks, dishwashers, or around the base of the water heater? The agent should inform the buyer if he or she locates any of these plumbing red flags.

Lead-Based Solder on Copper Pipe

Until the early 1990s, lead-based solder could be used for joining copper to the water supply pipe. If the home in question was built before 1990 and has soldered copper supply piping on it, the agent should disclose to the buyer that lead-based solder may have been used, and that the buyer should contact Poison Control in his or her local area for further information about the use of lead-based solder.

No "P" trap on washer drain

A "P" trap on a drain consists of the plumbing that runs down from the drain, then curves up and then back down again. Its purpose is to prevent sewer gasses from coming up into the living area. To see an example of a "P" trap, look under the sink in a bathroom. The agent should check for a "P" trap on the clothes washer drain. A missing "P" trap is more common in pre-1970s homes, when installing a washer drain was typically a retrofit.

General Electrical Red Flags

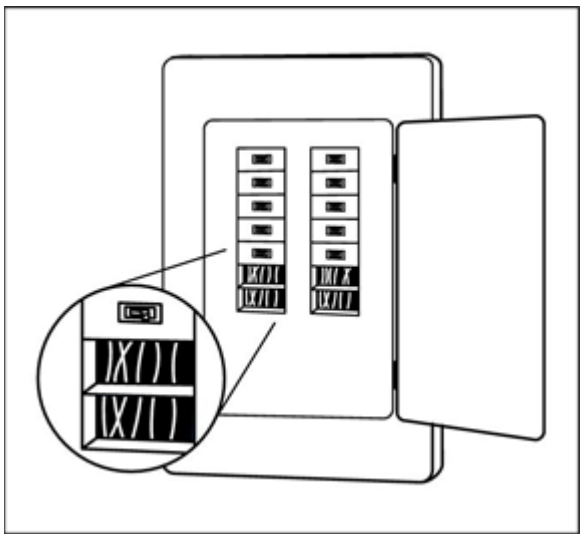
The agent should check all of the electrical fixtures and appliances in the house. Do the lighting switches work? Do the lighting fixtures turn on and off? Do the electrical kitchen appliances, including ranges, refrigerators, and dishwashers, operate? The agent should notify the buyer if any of these electric systems are inoperative.

Breakers and Panels

Modern building codes require that the main electrical breaker for the home is located outside. This is necessary so that firefighters or other public servants can shut off the electricity to the house, if necessary. Many pre-1970s homes do not have a main electrical shutoff, and if they do, it is often located inside the house. If this is the case, the agent should inform the buyer of this red flag. Bringing the electrical system of the house up to modern code requirements is usually cost prohibitive, and may not be required by the local municipality.

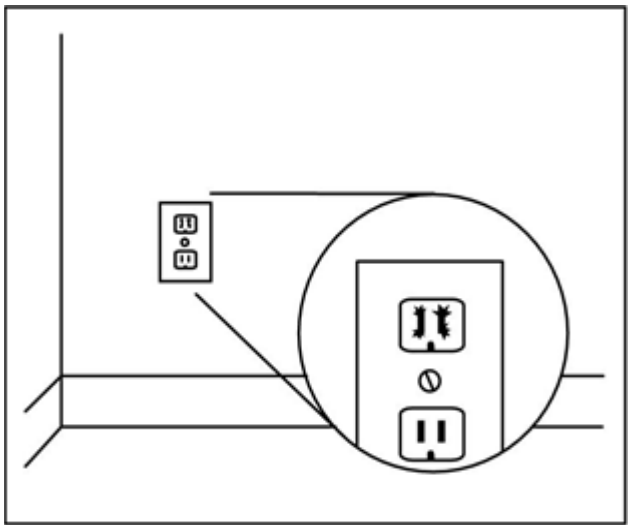
Building codes in most states prohibit exposed wiring. Besides being a safety hazard, open panel slots are a code violation and the agent should point out this defect to the buyer.

Figure 5.1: Panel with exposed slots.



Are there any damaged plug receptacles? Are there any scorch marks? Damaged electrical outlets are a safety hazard and the agent should point out this defect to the buyer. The existence of this defect may indicate a more extensive problem with the electrical system in the home.

Figure 5.2: Damaged electrical outlet.



Fuses

Fuses with amperage ratings greater than the wiring design parameters will sometimes result in the loss of the wires' insulation value. The agent should recommend that the principal install special amperage-selective inserts to prevent the use of oversized fuses in the future.

If screw-in fuses on a panel that has an amperage rating higher than 20 amps exist, the wiring in the home is probably not adequately protected. If any of the screw-in fuses on the fuse panel are more than 20 amps, the agent should notify the buyer that the wiring may have been over-amped.

Aluminum Wiring

Aluminum wiring is a potential fire hazard. This hazard is caused by overheating that occurs at the connections between the wire and devices such as switches and outlets, or at splices. Aluminum wiring was installed in homes in the period from the early 1960s to the early 1970s. Homes or additions built during this period may contain aluminum wiring. Aluminum wiring is still permitted for certain applications, including residential service entrance wiring and single-purpose higher amperage circuits, such as 240V air-conditioning or electric-range circuits.

The best way that the agent can check for this is to randomly select a light switch in the home or addition built during the period referenced above, and remove the cover for the switch. The agent should not reach or poke any object inside the switch area with the cover off, and should check the color of the bare portion of the wire that is connected to the switch. If the wire is a copper color, then the wire is probably copper. However, if the wire is a silver color, it is most likely aluminum. The agent should notify the buyer that there may be aluminum wire in the home. The switch cover should be replaced when the inspection is complete.

Air Conditioner, Furnace, and Water Heater Inspection

Smell of Gas

If the agent smells gas or suspects a gas leak, the agent should not light a match or any other open flame, should not use any electrical appliance or turn lights on or off, and should not use the telephone. Everyone in the building should leave immediately. The agent should call the gas company from another location, and notify them of the problem. The local gas company will usually respond very quickly to this type of concern—they will send a technician to the home to identify the source of the leak. The agent can then forward this information to the buyer. Additionally, the agent should notify the seller that the house gas should not be turned on until the leak is fixed. Gas shutoffs should be located for quick access and easy turnoff. Blocked or inaccessible gas valves are a red flag.

Inadequate Combustion Air

Any gas-burning appliance needs oxygen to burn. Without oxygen, the appliance will not operate properly and it could be at risk of producing carbon monoxide. A source of air for combustion must be made available to any gas-burning appliance; oil-fired water heaters and furnaces are no exception. If there is not free communication of air throughout the house, from the basement to the upstairs area, there is probably not enough of an inside air supply to satisfy the combustion air requirements of the furnace and water heater.

One way a mechanical contractor may alleviate this problem in an existing home is to install vents at the tops and bottoms of all collapsible doors that stand in the way of the free communication of air from the furnace to the upstairs area.

Combusted Air Backflow on the Water Heater or Heating Flue

Combusted air backflow on any gas appliance means that the air that has passed by the burners is not escaping entirely through the flue as intended, but is also escaping out into the space where the furnace and/or water heater is located. This may allow for low or no oxygen to be present, and a high amount of carbon dioxide (and possibly carbon monoxide) gas to come into the living space.

To see if this is the case, the agent should check for the feel of the hot flow of air around the uppermost lips of the mixers on water heaters or standard efficiency furnaces. The construction of medium- and high-efficiency furnaces do not allow for combusted air backflow, and therefore, they cannot be similarly checked.

Water heaters typically have a bell-shaped mixing housing that sits directly on top of the water heater with the flue rising above it. Hot air coming out from the sides of the mixing housing into the room indicates combusted air backflow. The agent should not directly touch the mixing housing or flue on gas burning appliances.

On standard-efficiency furnaces, the agent can check for hot air flow at the mixing box just below where the flue exits the furnace. The mixing box is typically a rectangular-shaped box, with an opening underneath. If hot air is coming out of the bottom of the furnace mixing box, the agent should recommend to the seller that he or she turns the furnace off until it is repaired. Disclose to the buyer the specifics of the problem.

Water Heater Bracing and Disclosure Requirements

Effective January 1, 1996, owners of any real property that contains a water heater are required to brace, anchor, or strap the water heater to resist falling or horizontal displacement due to earthquake motion. This is applicable to all existing water heaters, as well as new and replacement water heaters sold in California on or after July 1, 1991. The law also imposes additional disclosure requirements.

Additionally, a seller of any real property must certify to a prospective purchaser that this section has been complied with, including compliance with applicable local code requirements. This certification must be in writing and may be shown in existing transactional documents, including, but not limited to, the *Homeowner's Guide to Earthquake Safety*, a real estate purchase contract, a transfer disclosure statement, or a local option disclosure statement. C.A.R. Form SDC-14, the *Smoke Detector/Water Heater Statement of Compliance*, will satisfy this requirement.

Method of Anchoring

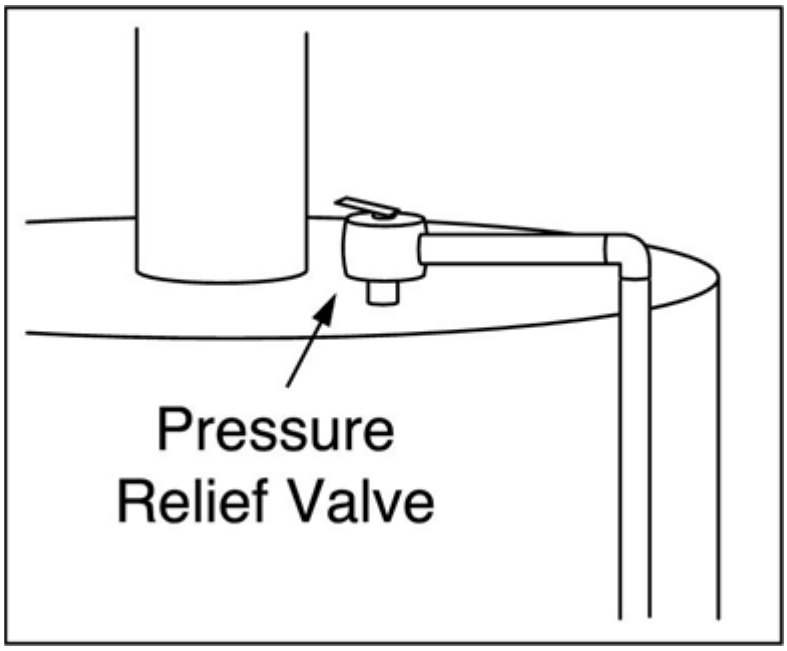
The new law does not specify how to anchor the appliances. One of the easiest and cheapest methods is to wrap the water heater with metal straps (known as *plumber's tape*) and to attach the ends of the straps to 2x4 wall studs with lag screws and washers. This is called the *Tape Method*.

Pressure Relief Valve on Water Heater

All water heaters can get hot and can build up a great deal of pressure. Pressure relief valves should be installed on all water heaters, regardless of age. The pressure relief valve is typically a

brass fixture located on the top of the water heater to allow for depressurization.

Figure 5.3: Pressure relief valve.



Gas Furnace Heat Exchangers

There is a very high risk that the heat exchanger is cracked in gas furnaces that are older than 20 years. A cracked heat exchanger means that combusted air that is high in carbon dioxide and low in oxygen, and possibly high in carbon monoxide, could pass through the crack in the heat exchanger and be mixed in with ventilated air that circulates throughout the house. This is a matter of significant concern. Some utility companies will do a free inspection of the gas furnace heat exchanger. In other cases, the principal may have to pay the utility company or an HVAC specialist to conduct the inspection.

Thermostats

One of the most important components of a home's heating and air conditioning system is the thermostat. If the home has a faulty thermostat, the HVAC system may be wasting energy dollars. To test the thermostat, the agent should turn it up to see if the heater turns on, and down to see if the air conditioner comes on. Listen for any loud noises as these systems engage.

QUIZZES ARE MANDATORY: Please log in and submit the chapter quizzes online.

Chapter Five Quiz

1. Which of the following is considered a general plumbing red flag?

(a) Faucets do not flow properly.

(b) There are signs of leaks under sinks, dishwashers, and around the base of the water heater.

(c) Toilets do not flush.

(d) All of the above.

2. Which of the following is considered a general electrical red flag?

(a) Some lighting fixtures do not turn on.

(b) Electrical kitchen appliances, including ranges, refrigerators, and dishwashers do not operate.

(c) Kitchen lighting does not work.

(d) All of the above.

3. Modern building codes require the main electrical breaker for the home to be located:

(a) inside the house.

(b) outside the house.

(c) on the roof of the house.

(d) under the house.

4. What should the agent look for when inspecting a home's electrical system?

(a) Damaged plug receptacles.

(b) Scorch marks around electrical outlets.

(c) Open panel slots.

(d) All of the above.

5. If the agent finds screw-in fuses on a panel that has an amperage rating higher than ___ amps, the wiring in the home is probably not adequately protected.

(a) 10 (c) 30

(b) 20 (d) 40

6. Aluminum wiring is a potential fire hazard that is caused by:

(a) flammable insulating material that may melt if the system shorts out.

(b) undersized wire gauge that cannot handle a typical home's power supply.

(c) overheating at connections between the wire and devices such as switches and outlets, or at splices.

(d) deterioration over time due to weather conditions.

7. *Combusted air backflow* refers to a potential problem with:

(a) gas furnaces and/or water heaters.

(b) electrical junction boxes.

(c) natural gas supply lines.

(d) sewage pipes.

8. The requirement to brace water heaters against falling or horizontal displacement due to earthquake motion applies to:

(a) replacement water heaters only.

(b) new water heaters only.

(c) new and replacement water heaters.

(d) damaged water heaters only.

9. One of the easiest and cheapest methods of anchoring a water heater is with metal straps called:

(a) anchor tape.

(b) water heater tape.

(c) contractor's tape.

(d) plumber's tape.

10. One of the most important components of a home's heating and air conditioning system is the:

(a) fuel supply.

(b) thermostat.

(c) insulation.

(d) fan.

Chapter Six: Environmental Red Flags

Important Terms

asbestos
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
Endangered Species Act
Environmental Impact Statement
Environmental Protection Agency (EPA)
Environmental Site Assessment
Federal Water Pollution Control Act
lead
Occupational Safety and Health Act
radon
Resource Conservation and Recovery Act
Safe Drinking Water Act
“sick building” syndrome
Toxic Substance Control Act
underground storage tank (UST)
volatile organic compounds
wetlands

Learning Objectives

Upon completion of Chaper Six, you should be able to complete the following:

- Identify basic environmental red flags on a site.
- List the major laws that govern environmental hazards.
- Explain the value of wetlands to our environment.
- Explain the potential problems with underground storage tanks.
- Identify asbestos in a home and explain the disclosure requirements.
- Explain what radon is and understand how it forms.
- List the agent’s responsibilities regarding lead in a home.
- List the most common indoor pollutants.

Federal Environmental Laws

Real estate professionals should be aware of each of the following laws established by the United States Congress to protect the public from environmental hazards.

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund)

CERCLA, enforced by the Environmental Protection Agency (EPA), created a fund to finance the remediation of environmental hazards and to compensate victims for such hazards. This act also established the duties of owners and operators of hazardous materials who handle facilities to notify state and federal governments in the event of unauthorized releases of hazardous waste into the environment. In addition, it created a National Contingency Plan and em ergency response authority.

Resource Conservation and Recovery Act

RCRA enables the EPA to regulate organizations that generate hazardous waste, hazardous waste processing facilities, and the transportation of hazardous waste.

The Federal Water Pollution Control Act

This act directed the EPA to establish a Water Pollution Advisory Board and established a permit and licensing system to enforce pollution control standards. It addressed the release of pollutants into navigable waters and provided federal funds to assist state and local governments in the development of publicly owned water treatment facilities.

Safe Drinking Water Act

This act required the EPA to develop and enforce national drinking water regulations in cooperation with state governments. States retain the primary enforcement responsibility for public water systems if they have adopted regulations at least as stringent as the EPA standards and have adequate enforcement capability.

Toxic Substance Control Act

This act empowered the EPA to assess the effect of chemical substances on public health and the environment. It placed the burden of researching and testing toxic substances on the private sector, and it covers the manufacture, distribution, processing, use, and disposal of chemical substances.

Occupational Safety and Health Act

Empowers OSHA to establish and en force standards to ensure safe and healthy workplace environments.

Endangered Species Act

The habitats of certain protected species under the Federal Endangered Species Act cannot be

disturbed or modified. The Federal Fish and Wildlife Service is the Federal agency that deals with this issue. This agency should be contacted prior to any development or farming of land, and must be contacted if there are any federal monies that are expected to be involved in the development or use of this land (e.g., FHA, VA, FHMA, the SBA, and even the secondary mortgage market, such as Fannie Mae or Freddie Mac).

Criminal penalties exist for the violation of the Endangered Species Act. When any new developments are planned or farmland is for sale, the agent should inform the developer, commercial building buyer or seller, or farm buyer or seller, that they should contact the Fish and Wildlife Service about these issues before proceeding with development or purchase.

Wetlands

Wetlands are areas that through surface drainage or underground water, become saturated and support vegetation typical of saturated soil conditions. In some cases, this definition could be as narrow as allowing for land that may only be wet for as few as seven days per year.

While many of the original wetlands in America have been eliminated by drainage of the water or filling with dirt, wetlands serve an important biological purpose. They help lower the Biological Oxygen Demand (BOD), which in turn helps aquatic life to survive. They also help filter out suspended solids (e.g., sediment) from the water, thus allowing the water downstream to be cleaner. Wetlands also help eliminate metals, pathogens, nitrogen, and phosphates from water. The regulation of wetlands is an attempt to reduce the loss of wetlands that promote clean water, and that provide habitats for various animal species.

Many local, regional, and state regulations limit the extent to which wetlands may be developed. However, recent US Supreme court decisions protect landowners from some development restrictions by treating onerous regulations as a "taking" under the Fifth Amendment of the Constitution. A number of Federal agencies are involved in the regulation of wetlands, including the Army Corps of Engineers and the EPA for non-agricultural uses, and the Natural Resources Conservation Service for agricultural uses.

There are potentially criminal penalties for failure to follow the laws concerning developing wetlands. An attorney that is familiar with wetlands regulations should be consulted prior to beginning development of a property or expansion of a farming use in a wetland area.

Environmental Reports

There are two types of environmentally related reports: the Environmental Impact Statement and Environmental Site Assessment.

Environmental Impact Statement

An *Environmental Impact Statement* is of central import in new construction. This report details the impact of a new building, development, or change in land use on the environment. This report can be quite broad, addressing the effect on the habitat of flora and fauna in the area, as well as the effect on the population, including traffic, noise, safety, and air quality. If governmental funding is involved in the project or change of use, the Environmental Impact Statement must be available to the public, and public hearings must be held, which can often criticize the results in the

statement or the project as planned.

Generally, the wetlands and endangered species sections above also need to be the concern of the commercial agent who is developing new properties. Hazardous and toxic waste as well as underground storage tank issues are a common concern.

Commercial or industrial agents should consult an attorney about specific ways to deal with these issues in their state to better assure that adequate warning of the possibilities of these problems in these buildings is provided. Often, environmental site assessments will involve not only inspecting the site for evidence of problems (e.g., unexplained barren patches, unusual odors, etc.), and interviewing the sellers and the owners of neighboring properties, but also checking other resources, such as aerial photographs and title searches, to better determine what previous uses may have been made of the property. Often such an evaluation is called a *Phase I* evaluation if it satisfies the American Society of Testing Materials Standards for an environmental site assessment.

Environmental Site Assessment

The second environmental report is the Environmental Site Assessment (ESA), which is an attempt to determine if there are any environmental hazards that could affect the use of the property and that might involve potential financial responsibility in the future.

Underground Storage Tanks

Underground storage tanks (UST) are defined as any tank system, including its piping, that is used for the storage of hazardous substances and that has at least 10 percent of its volume underground. Federal law regulates only those tanks that are used to store petroleum or those hazardous chemicals that are regulated under CERCLA.

The agent should question the seller about past uses of the property, and ask the seller whether there is an underground tank on the property. The agent should also review the title documents to see if the property was ever used for something other than a residence. Both current and former UST owners are responsible for the maintenance of an underground storage tank. Therefore, responsibility for complying with federal UST requirements can continue even after ownership of the UST ends. If there is an underground storage tank that is located on the property, many states will require that the tank be removed if it has not been in use for six months or more.

Asbestos

Asbestos is a carcinogenic mineral fiber. Most exposure occurs through inhalation—the inhaled asbestos fibers penetrate deep into the lungs. Fibers can also be ingested with food that is eaten in a contaminated area. The body cannot break down asbestos fibers, and there is no way to remove them once they are embedded in the lungs. A person who has been exposed to asbestos is at risk of developing a lung disease called *asbestosis* that is rarely curable.

Asbestos was used extensively in building construction from the early 1900s until the late 1970s. One of the most common exposed uses for asbestos was in ceiling texture. This texture is often referred to as *popcorn ceiling* or *cottage cheese* texture. Houses or additions that were built after 1978 are not likely to have asbestos texture.

Other common applications for asbestos include manufactured siding, roof shingles, and furnace ductwork wrap. White asbestos tape can be found at furnace ductwork junctions where the individual lengths are attached together to keep air from escaping at the joints.

Asbestos has also been used for attic or wall insulation. As attic insulation, asbestos typically has a white, flour-like look, or can appear in a more fluffy version. It can be readily distinguished from fiberglass insulation that tends to glisten when light is shone on it, where asbestos insulation does not. Asbestos insulation is typically not found in homes that were built after about 1950.

Wall and ceiling patching and joint compounds typically included asbestos until about 1977. Many flexible floor tiles and their adhesives contained asbestos as a binder for many years.

According the Federal Government, material is defined as containing asbestos if it contains more than 1% of asbestos as determined by an approved laboratory. If the seller is selling a home that he or she believes may contain asbestos, the seller should recommend that the buyer have the home tested by an asbestos abatement specialist.

Residential buildings with less than four units are exempt from having to use federal- or state-approved asbestos abatement teams to treat or remove asbestos. Nevertheless, agents are strongly discouraged from suggesting that an unqualified individual (e.g., the typical buyer) attempt to abate possible asbestos in their own home. If the agent and/or buyer suspect asbestos, they should contact the local state health department or an industrial hygienist for more information. The agent or buyer should also make that sure the testing company is not also in the business of conducting the abatement, which is a possible conflict of interest. The buyer, not the agent, should choose the testing company.

Asbestos Abatement

Asbestos material that has not been damaged should be left alone. If this is not the case, there are three common options for asbestos abatement: encapsulation, enclosure, or removal. Asbestos abatement should always be conducted by a licensed asbestos professional.

1) Encapsulation: A sealant is used to bind the asbestos fibers together or coat them to encapsulate the exposed asbestos.

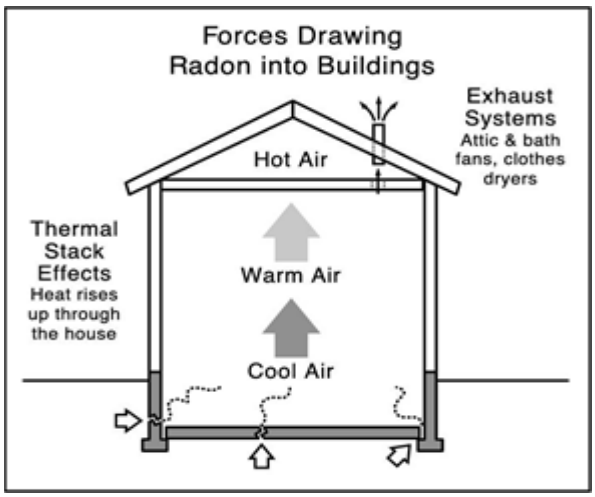
2) Enclosure: Asbestos-insulated piping is enclosed in a protective material that prevents the release of fibers.

3) Removal: Removal of asbestos should only be done by certified asbestos professionals.

Radon

Radon is a naturally occurring radioactive gas that is produced by the decay of uranium and radium, and generated in the soils beneath homes. Radon is a known human carcinogen.

Figure 6.1: Various ways radon can enter a home.



Radon can enter a home through cracks in the floor slab or foundation, or through water that runs into the house.

Generally, if the home is found to have a radon level of 4 pCi/l (picoCuries per liter of air), it is considered to be at the "action level" as determined by the EPA. This means that the house should have some type of radon mitigation equipment installed to help reduce the radon levels in the house.

Elevated radon levels have been discovered in every state. While there are factors that can predict whether or not a home is likely to have elevated radon levels, it is not possible determine whether or not a specific home has radon without a test. A radon test measures the radon level over at least a 48-hour period. Test protocol requires that doors and windows remain closed except for normal exit and entry. It is estimated that in up to half of radon tests conducted, there is tampering with the protocol requirements (e.g., a window was left open during the test, the test device was moved during the testing period, etc.). Tampering voids the results of the test.

If there are indications of radon in the seller's area, the agent should recommend to the buyer that he or she conduct a radon test after moving into the house. If a test conducted prior to the home purchase indicated a low level of radon, while a test conducted after moving in indicates elevated radon, a likely culprit could be tampering.

Mitigation of radon can be expensive (e.g., $1,000 to $3,000). If a buyer is interested in knowing about whether or not homes in the neighborhood have been found to have high radon levels, the agent should recommend that the buyer contact the radiation division of the state health department. If this division does not handle the radon issue in the buyer's state and/or there have not been any radon surveys done in the buyer's state, the department may still know whom you could contact regarding these issues. The agent should avoid suggesting that there is no need for testing, interpreting test results, or downplaying the issue.

Lead

Lead can have serious effects on health, especially on the health of children (e.g., brain damage can occur). People can accumulate lead in their body by inhaling or ingesting it. Remodeling efforts in a home that contains lead-based paint is one of the more significant ways lead finds its way into the human body. Additonally, toddlers tend to stick toys and other items in their mouths that may have lead on them. Children can suffer serious health problems if they ingest or inhale lead paint chips or dust. The problems include learning disabilities, decreased growth, impaired hearing, and brain damage. If pregnant women ingest lead, they may also carry health risks to their unborn children or may miscarry.

An accurate test for lead is one that bombards X-rays into the paint sample (X-ray fluorescence). If greater than 1.0 microgram of lead per square centimeter of paint is found by using this method, the paint is classified as lead-based.

Most of the federal regulations regarding lead in homes cover houses built prior to 1978. However, disclosure must be made to not only home buyers, but also to tenants by the seller or lessor and his or her agents. Oral leases are not exempted from these regulations. These disclosure requirements not only require disclosure about whether the paint in the house has been previously tested or not, but also requires that the responsible party provide copies of actual reports of the results.

Furthermore, the pamphlet entitled *Protect Your Family from Lead in the Home* must be provided, along with appropriate language in the purchase agreements or leases with regard to the disclosure, etc. For instance, the *Disclosure of Information and Acknowledgment* form must also be included along with the offer to the buyer. All agents are responsible for this unless they are buyers' agents and they are only being paid by the buyer in the transaction at hand. All agents should be sure that the buyer has received both the pamphlet and the disclosure form. In addition, the buyer has the right to have the house tested for lead within up to 10 days or another agreed-upon time limitation. However, the buyer can legally waive this opportunity.

There are some exceptions to these regulations, although they do not commonly apply except perhaps in the first case:

1) Renewals of existing leases, so long as appropriate disclosures were made at the time of the original lease (not applicable for leases that were in effect on September 6, 1996).

2) Living units that have no bedrooms or separation between the sleeping and living areas (e.g., dormitories, barracks, individual rental rooms within a residence, studios, efficiency apartments, etc.).

3) Property that involves a lease that covers 100 days or less without a lease renewal or extension.

4) Rental property certified as *lead-based paint free* by a federally certified inspector or a state-certified inspector under a federally authorized certification program.

5) Property that is being sold as a foreclosure (this exception does not apply when the home is resold).

6) Housing for the disabled or elderly, so long as children under the age of six are not expected to live in the housing.

If, after discussing these lead issues with a buyer (especially buyers with young children), the agent determines that the buyer has concerns about this issue, the agent should ask the buyer if he or she wishes to see only homes built after 1978. The agent may also want to explain that this may limit the selection of both homes and neighborhoods from which to choose.

The agent should never suggest in any way, even by implication, that there is no need to test a home built prior to 1978, and should always provide the buyer with phone numbers of the appropriate state and federal agencies. Remember, there are both civil and criminal penalties for violation of these regulations, including the possibility of treble damages.

If there are contingencies in the *Earnest Money Agreement*, it would be wise for the agent to make sure that the deadlines for testing or voiding the contract if lead is discovered are spelled out. Also, it would be wise to state in the contract how the earnest money will be handled in the event of a void by the buyer. While there is a Federal definition of how much lead must be in paint in order to be considered lead-based paint, it ultimately must be up to the buyer to decide what level he or she is willing to tolerate. Any deadlines (e.g., for testing, rescission, etc.) should be easily determinable, whether it is a specific date or a specific number of days from signing, notification, etc. to establish the deadline.

Indoor Pollutants

Volatile Organic Compounds

Indoor pollutants cover a large range of chemicals, including volatile organic compounds and biological- and combustion-related pollutants.

Volatile organic compounds is a phrase that is used to denote carbon compounds that tend to be emitted as gases into the air, whether originating from a solid or liquid compound. One of the most common culprits is pesticides. Recent evaluations have suggested that we either use or track into our house enough pesticides to make the indoor air of our house more polluted than the air outside. Careful use of pesticides and herbicides around the home is one of the best ways to reduce pesticide exposure in the home. It is a good idea for the agent to furnish a seller's questionnaire, which includes questions about the previous use of pesticides in the home.

Formaldehyde is another volatile organic compound that is a concern. It is often a degassed byproduct of pressed wood (e.g., *Chipboard* or OSB board) and insulation (e.g., Urea Formaldehyde Foam Insulation (UFFI)) products. After a number of years, the risk of exposure to formaldehyde is greatly reduced because any degassing of formaldehyde from the products is more likely to have completed. This issue is primarily one of sensitivity; some individuals are especially sensitive to formaldehyde exposure. The agent should ask the principal whether or not the principal knows if he or she is sensitive to formaldehyde or not. If the principal is sensitive to formaldehyde, you will want to explain to him or her that newer homes are more likely to contain formaldehyde contaminants than older homes.

Biological Pollutants

Biological pollutants can include mold, pollen, animal hair and excrement, bacteria, and insect parts and feces. The most common biological pollutants that may not be easily cleaned up are probably molds and bacteria. Possible moist areas in the house can create circumstances that are conducive to these growths. Sources of moisture should be eliminated and the area affected by these growths should be cleaned.

Combustion Pollutants

Combustion pollutants are typically gasses that are produced through heating systems that rely on fossil fuels for their energy. Having heating appliances that are in good operating condition is the best way to reduce the risk of exposure to combustion pollutants. If there are any space heaters in the home, it would be wise for the agent to forewarn the buyer that there may be some gaps in the heating system that could require supplemental heat. Fuel-burning space heaters are never considered an appropriate response to “cold pockets" in a home.

Sick Building Syndrome

While there are a variety of reasons for why a building is classified as *sick*, there are a few specific items that can be responsible for a sick building. Many of them are chemically related (e.g., pesticides—see *Indoor Pollutants*, above). Some are simply a matter of unsafe heating or air-conditioning systems in the building (e.g., not enough integration of fresh outside air into the system). Others are related to the building products used in construction (formaldehyde that is released from some of the pressed wood products used in construction).

Have the buyer conduct a confidential survey of the current tenants to find out whether they or any of their employees experience any unusual symptoms. If the buyer plans on significantly changing the use of the building, he or she should consider consulting an expert in heating and air conditioning to be sure that the system does not need to be modified to accommodate the new use.

Homes that are serviced with water by a well are far more likely to run into contamination problems than those that utilize a municipal source. Specific causes of well water contamination include leaking underground storage tanks, faulty septic systems, underground pipelines, hazardous and non-hazardous landfills, road de-icing, agricultural runoff of pesticides and fertilizers, surface impoundments, waste injection wells, and mining activity. Once contaminated, groundwater is difficult, if not impossible, to clean up. An individual homeowner can rarely afford to treat contaminated well water. Therefore, it is important that property owners are aware of the factors that could affect a property's drinking water supply.

Careful questioning of the seller about the history of the well and discovery of the results of any previous tests is critical. Homebuyers should also obtain their own water tests on the well water if feasible. Such a test should at least include evaluations for nitrates, coliform bacteria, pH, and dissolved solids. Tests for some of the more common metal or other contaminants should also be done (e.g., iron, sulfate, etc.).

Another level of testing can be conducted when industrial contamination of groundwater is suspected. This consists of the costly testing of water for a wide range of organic chemicals and

heavy metals such as arsenic and chromium. Local, state, or federal environmental officials should be consulted about the need for such costly testing. While testing can help determine the quality of drinking water on that day, testing cannot easily predict future well-water contamination.

Toxic Mold

Molds: What Are They?

Molds are microscopic organisms that nature uses to break down dead material and recycle nutrients back into the environment. Molds require a food source to grow, and they reproduce best in moist areas. As they digest organic material, they slowly destroy whatever they grow on. Molds can be identified by some sort of discoloration in a variety of different colors.

How Are We Exposed To Molds?

The most common type of mold exposure is through airborne ingestion of microscopic mold spores that are released into the air as molds digest the organic compounds they grow on. Significant health problems usually only arise when a large number of spores are inhaled. Exposure can also occur by touching contaminated materials or surfaces or by eating contaminated food.

People vary in their sensitivity and reaction to mold exposure. Some people may react to a very small number of mold spores while others may be relatively non-allergic to mold particles. Allergic reactions (sometimes mistaken for hay fever) are the most common symptoms seen with mold exposure. These may include (alone or in combination):

- Wheezing, difficulty breathing, and shortness of breath.
- Nasal and sinus congestion.
- Eye irritation (burning, watery, or reddened eyes).
- A dry, hacking cough.
- Nose or throat irritation.
- Skin rashes or irritation.

Toxic Mold Disclosure Requirements

In 2001, to address recent public concerns about toxic mold, the legislature passed into law *The Toxic Mold Protection Act* (SB 732). This act is intended to study and measure permissible exposure limits of toxic mold and to establish new disclosure obligations for sellers and landlords concerning the presence of toxic mold.

Part of The Toxic Mold Protection Act called for the creation of a taskforce to work with the California Department of Health Services (DHS) to develop permissible exposure limits for molds, adopt practical standards to assess the health threat posed by the presence of mold, adopt mold identification guidelines for the recognition of mold, and to develop and disseminate remediation guidelines for molds.

Once these standards had been set by the DHS, sellers, transferors, and landlords of commercial and industrial property (but not sellers or transferors of residential property) were required to provide written disclosure of the mold conditions on their property to potential buyers and prospective tenants, renters, landlords, or occupants.

With single-family residential properties, The Toxic Mold Protection Act changed the Transfer Disclosure Statement (TDS), adding mold to the list of natural hazards in the Sellers information, item II.C.1. In addition, there is a section in the Environmental Hazards Disclosure Booklet on mold. If this booklet is delivered to a transferee in connection with the transfer of real property, neither the seller nor broker is required to provide additional information concerning the environmental hazards described in the booklet.

Licensees should note that there is no requirement imposed upon the seller, transferor, or landlord of commercial or industrial properties to conduct air or surface tests for the presence of molds. However, once a landlord is informed that mold is present in the building, heating system, ventilating system, air-conditioning system, or appurtenant structures, landlords must test for the presence of mold and take the appropriate action to eradicate the problem.

The act also protects transferors, as well as listing and selling agents, from liability for any error, inaccuracy, or omission based upon information that is provided by a public agency or a report prepared by a third-party expert.

QUIZZES ARE MANDATORY: Please log in and submit the chapter quizzes online.

Chapter Six Quiz

1. Which of the following acts established a permit and licensing system to enforce pollution control standards?

(a) Resource Conservation and Recovery Act

(b) Federal Water Pollution Control Act

(c) Safe Drinking Water Act

(d) Toxic Substance Control Act

2. Certain protected species cannot be disturbed or modified under the:

(a) Wetlands Act.

(b) Environmental Protection Act.

(c) Endangered Species Act.

(d) Green Act.

3. Wetlands serve an important biological purpose by:

(a) helping biological life survive.

(b) filtering out sediment from the water.

(c) eliminating metals, pathogens, nitrogen, and phosphates from the water.

(d) all of the above.

4. To investigate the possible existence of an underground storage tank on the property, the agent should:

(a) question the seller about past uses of the property.

(b) ask whether there is a UST on the property.

(c) review title documents to see if the property was ever used for something other than a residence.

(d) all of the above.

5. If you are selling a home that you believe may contain asbestos, the agent should recommend that the buyer have the home tested by:

(a) an asbestos abatement specialist.

(b) an asbestos chemist.

(c) a home inspection contractor.

(d) the seller.

6. By using a sealant to coat exposed asbestos fibers, you are performing the asbestos abatement procedure called:

(a) enclosure.
(b) removal.
(c) encapsulation.
(d) overlap.

7. Radon is a naturally occurring radioactive gas produced by:

(a) decay of plant and animal matter in the soil.
(b) decay of carbon fibers (coal) in the soil.
(c) decay of igneous rock in the Earth's crust.
(d) decay of uranium and radium in the soil.

8. People can accumulate lead in their body by:

(a) inhaling it.
(b) ingesting it.
(c) both (a) and (b).
(d) neither (a) nor (b).

9. One of the more significant ways lead finds its way into our bodies is through:

(a) illegal dumping.
(b) toxic spills.
(c) remodeling.
(d) repainting.

10. Which of the following is considered a Volatile Organic Compound?

(a) Formaldehyde
(b) Pesticides
(c) Herbicides
(d) All of these.