**UVB Lighting for Reptiles**

**UVB Lighting for Reptiles**

Lighting for captive reptiles is an ever-changing field, and as reptile keepers we strive to

provide as natural of an environment as possible for our captive animals. Visible light, including UVA, is provided by most any light bulb, including those used to provide heat in a reptile’s enclosure. Various wavelengths of light are essential as they allow prey items, other animals, structures in the enclosure, etc. to appear in the proper colors they are supposed to, along

with providing a normal day-night cycle. When reptiles are exposed to natural sunlight, a reaction occurs in the skin that causes the production of Vitamin D3, which in turn allows absorption of calcium from the diet. This reaction occurs when a reptile is exposed to UVB light, or lighting in the 280-320nm range. Without exposure to UVB, reptiles cannot make Vitamin D3, and in turn cannot absorb the calcium they are given in the diet. When this happens, they pull calcium from their bones in order to keep certain bodily functions going that rely on calcium. This results in a condition known as Nutritional Secondary Hyperparathyroidism, or Metabolic Bone Disease (MBD). When this happens, the animal’s bones become weak and can break easily or become soft and bowed; they develop deformities or their growth is stunted. Eventually it starts to cause other problems such as weakness, lethargy, poor appetite, muscle tremors, and even seizures and death.

UVB lighting is essential for reptiles, but how do you know what to provide? What type of

bulb should you use? Where should it be placed? The answer depends on many factors. Different species of reptiles require different types of lighting, and as always, we want to mimic what is present in nature for a certain species. Some animals are full sun baskers like bearded dragons and uromastyx. Some get UV exposure through heavy foliage such as chameleons. Some animals that eat whole prey, like snakes, don’t seem to “need” UVB but it may still be beneficial. The same applies to our nocturnal animals like leopard and crested geckos.

They can utilize Vitamin D3 orally but that doesn’t mean they don’t benefit from UVB lights. Below we’ll provide some general guidelines to UVB lighting, but we encourage every reptile owner to do research on the species they are keeping, and as always ask your veterinarian if you have questions about what to provide for a certain species.

**General Guidelines**

* All UVB is blocked by glass or plastic
  + You cannot sit a tank or the animal in a sunny window; the UVB wavelength is filtered by the glass of the window and the tank.
  + Some fluorescent light fixtures come with a plastic cover on them – remove it!
* All UVB decreases the further the animal is from the bulb
  + Different styles of bulbs should be placed at certain distances to be effective and not harmful – always check the manufacturer’s recommendations!
  + You may need to raise or lower your basking area or the light depending on the distance needed for the UVB light you have and species you are keeping
* All UVB decreases over time
  + The light may still turn on but not be producing UVB
  + The best way to monitor output is with a UVB meter (we have one at the clinic)
  + If you don’t have a meter, bulbs should be replaced at certain intervals even if the light still turns on – replace linear fluorescent bulbs every 6-8 months and mercury vapor bulbs yearly
* UVB will be partially filtered out by passing through certain items (screen tops). This can be overcome by adding a reflector or other reflective surface (such as aluminum foil) on the inside of the light fixture
* The UVB light should be placed next to the heat lamp so the animal gets UVB exposure when basking, with a gradient to the cool end just like heat
* Bulbs sold for plants or fish tanks are NOT the same as UVB bulbs for reptiles
* Be very careful of bulbs called “full spectrum” or if someone tells you a bulb has UV in it – you need to see UVB specifically on the box
* UV Meters
  + Used to measure output of bulbs
  + Can be expensive up front, but saves money in the long run as bulbs may last longer than expected and not need to be replaced as often
  + Solarmeter 6.2 – measures the output of the bulb in microwatts of UV. Full sun outside is usually 250-300 uW, shade about 100-150 uW. Most bulbs should be replaced if they are reading less than 20uW at basking distance.
  + Solarmeter 6.5 – measures UV Index, or intensity of the bulb. This translates into the part of the light that is used to produce adequate Vitamin D3. If too high, this can cause damage such as “sunburn” to the skin and eyes.

**Available Bulbs**

* Styles
  + Linear fluorescent tubes – produce UVB the full length of the tube, length is determined by size of enclosure, only produce light not heat
    - T5 vs. T8 – this is the diameter of the bulb. As a general rule “standard” T8 UVB tubes need to be closer than 12 inches to the animal, and T5 bulbs need to be at least 12-18 inches away. HOWEVER this can vary by manufacturer, so always check their recommendations!
    - 2.0 vs. 5.0 vs. 10.0 – amount of UVB produced with 10.0 being the highest. 10.0 is usually recommended for full sun baskers, 5.0 for animals that live more in shade, and 2.0 for low output needs like amphibians or nocturnal animals
  + Compact fluorescent bulb – produce UVB only in a very tight cone around the bulb. Animals need to be very close to the bulb for it to be useful, and only very small animals can fit underneath it. Sold in many reptile kits but are not recommended or useful for most commonly kept reptile species. AVOID.
  + Mercury vapor bulb – floodlight style bulb that produces UVB AND heat, usually needs to be placed 12 inches or more away from the animal. Bulbs can break with excessive handling, so always turn off and allow to cool before moving; bulb will shut off automatically and need to cool before coming back on. Wattage chosen is more important for heat output, always double check temperatures!
* Brands
  + Arcadia: [www.arcadiareptile.com](http://www.arcadiareptile.com)
    - Excellent quality UVB fluorescent tubes that hold up well over time
    - Specific lighting guide available on website – enter your species name and it will tell you exactly what bulb you need and where to place it in your reptile’s enclosure
    - Website VERY informative but bulbs are sold through various retailers
  + ZooMed: [www.zoomed.com](http://www.zoomed.com)
    - Various types of lights available
    - Good quality bulbs with good output over time, excellent warranty coverage, available in most pet stores
    - Tube fluorescent bulbs (ReptiSun) and mercury vapor bulbs (PowerSun)
  + MegaRay: [www.reptileuv.com](http://www.reptileuv.com)
    - Mercury vapor bulbs of excellent quality
    - Sometimes inconsistent availability
  + Various others are available, but not as highly recommended. Main concerns stem from inconsistent quality and UVB output, from not producing enough to producing harmful levels.

**Additional Resources**

[www.uvguide.co.uk](http://www.uvguide.co.uk)

The original website with extensive information about UV, lights, UV meters, etc.

<https://www.arcadiareptile.com/lighting/guide/>

Enter your species and it will tell you what Arcadia bulb is recommended and what distance to place it away from the animal in the enclosure.

[“Reptile Lighting” group on Facebook](https://www.facebook.com/groups/ReptileLighting)

Run by Frances Baines, one of the foremost experts on reptile UVB lighting in the world, a way to interact with other reptile owners and ask questions about UVB lighting.