



CASE STUDY: THE EFFECTS OF HEAVILY CHLORINATED POOL WATER ON ASPHALT IN AN HOA COMMUNITY



BACKGROUND

The HOA observed that the asphalt pavement adjacent to the recreation area exhibited persistent staining and signs of accelerated aging, deteriorating more rapidly than other roadways throughout the community. This case study examines how repeated exposure to chemically treated pool water, combined with Arizona's intense UV exposure and high summer temperatures, accelerated pavement deterioration and increased maintenance costs well before the HOA's anticipated pavement life cycle.



OBSERVATIONS

- Persistent staining developed on asphalt surfaces surrounding the recreation area.
- Asphalt adjacent to the pool complex faded significantly faster than pavement elsewhere in the community.
- The asphalt binder became increasingly dry and brittle due to accelerated oxidation.
- Surface cracking developed sooner than expected and progressed into raveling, where aggregate loosened from the pavement surface.
- Maintenance records showed these areas required crack repairs and patching several years ahead of the HOA's normal pavement maintenance schedule.



PREVENTATIVE MEASURES

To protect its infrastructure, the HOA implemented several maintenance improvements:

- Redirected pool backwash and drainage away from asphalt pavement whenever possible.
- Increased sweeping frequency around the recreation area to remove chemical residue, mineral deposits, and debris.
- Scheduled routine pressure washing to reduce staining and remove accumulated contaminants.
- Incorporated annual crack sealing and periodic sealcoating into its preventative maintenance program.



RESULTS

Within two years of implementing these measures, the HOA experienced:

- Reduced staining around the recreation area.
- Slower pavement deterioration adjacent to the pool complex.
- Fewer new cracks requiring repair.
- Reduced annual asphalt maintenance costs.
- Improved appearance of the community recreation area and surrounding roadways.
- Extended pavement life, delaying the need for costly resurfacing.



KEY TAKEAWAY

For HOA communities with recreation facilities, swimming pools are valuable amenities—but repeated exposure to heavily chlorinated pool water can contribute to surface staining and accelerate asphalt deterioration if not properly managed.

While chlorine alone is rarely the sole cause of pavement failure, repeated exposure to chemically treated pool water—especially when combined with UV exposure, extreme heat, and regular maintenance traffic—can significantly increase pavement deterioration over time.

BEFORE PRESSURE WASHING



Notice the persistent staining, chemical residue and dull, aged appearance of the asphalt.



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