

Blackout

in the Gas Patch

How Pennsylvania Residents are Left in
the Dark on Health and Enforcement

AUGUST 2014

SUMMARY



EARTHWORKS™

OIL & GAS ACCOUNTABILITY PROJECT

Blackout in the Gas Patch

How Pennsylvania Residents are Left in the Dark on Health and Enforcement

Like most other oil and gas states, Pennsylvania did not prepare for the rapid expansion of development brought about by new technologies and the shale boom—or for the resulting impacts on people and the environment.

Representative of a nationwide trend in recent years, Pennsylvania's oil and gas regulatory agency, the Department of Environmental Protection (DEP), has faced steep budget cutbacks at the same time that development has surged. Exacerbating the problem of limited oversight capacity, Governor Corbett issued an Executive Order in 2012 requiring DEP to speed the permitting of new development by guaranteeing decisions within set timeframes.

Blackout in the Gas Patch: How Pennsylvania Residents are Left in the Dark on Health and Enforcement examines the consequences of prioritizing industry expansion without an equal commitment to protecting the public. We started this work from the perspective of residents living with gas and oil development, asking what they need to know to

make sense of what's happening around them. Our goal was to examine how events at certain gas well sites and facilities may have affected air and water quality and the health of nearby residents, as well as how DEP and operators handled these situations.

Earthworks conducted a year-long investigation into how DEP permits and oversees gas and oil operations, what has occurred at certain locations, and the circumstances facing numerous households and communities. Our work included in-depth analysis of DEP files and reports, independent environmental testing, review of current science, and discussions with residents statewide. In the process, we confronted inconsistent and sometimes inaccessible documentation, requiring the piecing together of a complicated puzzle of information.

The Department of Environmental Protection (DEP) has faced steep budget cutbacks at the same time that development has surged.



Homes in this neighborhood are surrounded by multiple wells, a compressor station, a gas processing facility, and an impoundment. Photo by Robert M. Donnan



Well site flaring. Photo by Frank Finan

In sum, our findings indicate that Pennsylvania is making a choice to sacrifice the health of its communities and environment in the interest of supporting and rapidly expanding the gas and oil industry. Not only is it very difficult for residents to know whether a nearby operation poses risks to their health and families, and why, but regulators themselves are not capable of reliably answering that question. In the midst of a statewide rush to drill, DEP is unable to sufficiently respond to citizen concerns, conduct inspections and investigations, collect the information needed to enforce regulations, and uphold the agency’s own mandate.

Overall, we developed 25 findings, summarized in the following table; the information and analysis behind each one is discussed throughout the full report. For details on the methods used, see Appendix A; for a list of the gas wells and facilities researched, see Appendix B.

➤ For the full report and comprehensive case studies go to <http://blackout.earthworksaction.org>

25 Key Findings:

| HEALTH CONSIDERATIONS: AIR AND WATER QUALITY | | |
|--|--|---|
| Key Finding | | Current Status |
| 1 | Health risks from emissions not considered | Neither DEP nor any other state agency has conducted long-term analyses of the health impacts of oil and gas emissions. Continuous air monitoring near wells and facilities is rarely done. |
| 2 | Emissions information is incomplete | Information gaps make it impossible to assess the extent of pollution to which residents are exposed, in particular a lack of analysis of emissions that are local, episodic, and from conventional wells. |
| 3 | Scope and density of gas development ignored | DEP permits wells and compressor stations one at a time, with no consideration of the cumulative impacts—even though residents may be surrounded by dozens of operations that together emit significant amounts of pollution. |
| 4 | Setbacks insufficient to address air impacts | Pennsylvania oil and gas regulations presume that air emissions only have an impact over shorter distances—lagging behind emerging evidence to the contrary. |
| 5 | Residents bear a heavy burden of proof of water contamination | DEP’s testing is limited and omits contaminants linked to oil and gas activities. Inconsistent pre- and post-drill testing prevents the “apples to apples” results that residents need to get replacement water supplies. |
| 6 | Water contamination from gas and oil likely understated | DEP doesn’t appear to count or track the letters it issues to residents following water contamination investigations. |
| 7 | Only limited causes of water contamination are considered | DEP investigations tend to primarily focus on methane migration—lagging behind emerging science on other causes. DEP routinely limits quality control data and information on heavy metals in reports given to residents. |

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| PERMITTING AND SPECIAL REQUIREMENTS | | |
|-------------------------------------|--|--|
| Key Finding | | Current Status |
| 8 | Faster permitting likely limits scrutiny | The Permit Decision Guarantee, mandated by Governor Corbett and adopted in 2012, requires DEP to issue permits within set timeframes. Staff (whose job performance is tied to the deadlines) may cut corners when reviewing information with environmental and health implications. |
| 9 | Long-term activities at well sites not considered | Erosion and sedimentation (E&S) control permits exempt operators from having to take protective measures as long as a site isn't restored, potentially leaving areas unprotected for long periods of time. |
| 10 | Expansion of sites ignored | New E&S permits aren't needed for activities disturbing less than 5 acres of land—even if they're part of a project that becomes much larger over time. |
| 11 | Special protection for watersheds not guaranteed | DEP doesn't require operators to take particular measures to prevent degradation of "special protection" watersheds—even though the designation requires it. |
| 12 | No evidence that waste management practices meet regulations | DEP issues waivers for "alternative" methods of waste management, but doesn't appear to follow PA law by requiring evidence that the practices will protect the environment as well as existing regulations. |
| 13 | Waste pit waivers allow circumvention of regulations | Waste management waivers allow operators to avoid regulations by putting pits even closer to groundwater and using thinner pit liners. |
| 14 | Distance from streams, springs, and wetlands requirements practically ignored | Information on DEP's issuance of stream distance waivers is limited; gas well permit reviews do not appear to consider proximity of operations to water bodies. |
| 15 | Information on well site restoration is limited | Well site restoration reports were missing from more than 80% of the reviewed well files that should have had them. DEP doesn't include these reports in the public database eFACTS, even though they are key sources of information on the status of well sites and waste disposal. |
| 16 | Information on drilling and stimulation completion missing | 25% of required drilling reports and 35% of completion reports were missing from reviewed files that should have had them. These reports signal when sites should have been restored and the chemicals and substances that operators used. |

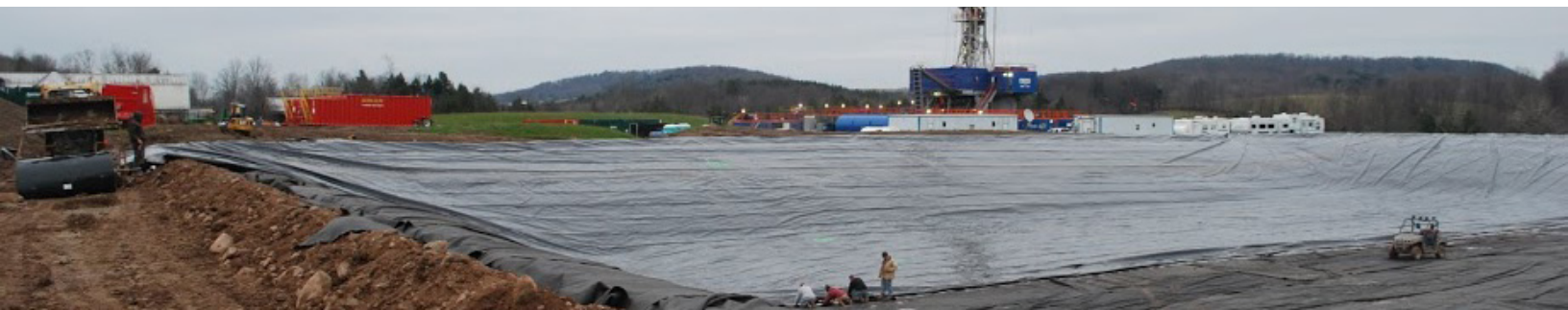
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A water "buffalo" for clean water storage next to a methane vent on a contaminated water well.

Photo by Nadia Steinzor/Earthworks

| INSPECTIONS, VIOLATIONS, AND CITIZEN COMPLAINTS | | |
|---|---|---|
| Key Finding | | Current Status |
| 17 | The majority of wells are left uninspected | DEP has been inspecting more wells every year, but given industry expansion, most are still neglected. DEP didn't inspect 83% of active wells in 2013 and 89% in 2012. |
| 18 | DEP can't meet its own inspection goals | DEP's goals include well inspections up to seven times before production even begins and once a year thereafter. Among the 485 wells we analyzed, 24% of the conventional wells had never been inspected and 38% of the producing unconventional wells had three or fewer inspections. |
| 19 | Inspection information missing | 17% of the inspection reports listed in eFACTS for the wells we reviewed were missing from the hard copy files. DEP denied our Right-to-Know request for missing reports related to incidents and citizen complaints. |
| 20 | Inspections can lag for years | A long time can pass between inspections. We found gaps of up to 7 years at some active wells. |
| 21 | DEP neglecting conventional wells | As DEP shifts scarce resources to focus on unconventional wells, violations at conventional wells have increased. |
| 22 | DEP prioritizes fixes over fines, reducing deterrence of potential violators | The rate at which fines are issued for violations at both unconventional and conventional wells has declined in recent years; DEP encourages operators to "self-correct." |
| 23 | Complaints information limited and hard to get | Complaints information available to the public omits information on how DEP responded, why a problem is considered "resolved," or whether complaints are tied to particular incidents or sites. Among the nearly 120 well files we reviewed, 30% of complaint inspection reports listed in eFACTS were missing. DEP denied our Right-to-Know request for the missing reports. |
| 24 | DEP allows limited response | DEP's complaints policy allows staff to wait several days to more than a month before responding to most complaints. Complaints about odors can be ignored, even though they can signal pollution and health risks. |
| 25 | Complaints can be disregarded | DEP's complaints guidelines allow staff to dismiss complaints that are repetitive or related to situations that DEP has already investigated. |



Well site impoundment under construction. Photo by Frank Finan

Just prior to the release of this report, Pennsylvania's Auditor General released an independent report on DEP's protection of water quality in the face of shale gas development. While the scope and goals of that investigation differed from ours, the Auditor General reached similar conclusions about DEP's ability to communicate with residents, resolve contamination problems, inspect sites, and document both industry activities and its own work. Our report reinforces what the Auditor General stated: that DEP is "underfunded, understaffed, and does not have the infrastructure in place to meet the continuing demands placed upon the agency."

Blackout in the Gas Patch focuses on a problem that DEP and Pennsylvania's decisionmakers must confront: the on-the-ground consequences of the failure to oversee the gas and oil industry and hold operators accountable for the damage they cause. As the household case studies developed together with this report demonstrate, residents statewide are forced to live every day with the fact that a public agency and public officials are not, in fact, serving the public.

Repairing this situation will require a significant investment of both resources and political will. We provide a set of recommended actions to move DEP and Pennsylvania in the right direction.

Recommendations: Public Information

In the course of this project, we found that many pieces of the puzzle of how problems reported by gas field residents are linked to the development around them—but we also found huge gaps in documentation and recordkeeping. Lack of a "paper trail" hampers DEP's ability to carry out its enforcement responsibilities. It also severely limits the public's right to know what is happening in their communities and to hold DEP—as a public agency—accountable. To ensure access to information, Pennsylvania should:

CONDUCT A COMPREHENSIVE AUDIT OF DEP'S OIL AND GAS REGULATORY ENFORCEMENT PROGRAM. Aspects to be investigated include (but are not limited to) rates and types of inspections; when and why violations are issued; recordkeeping practices; water and air testing policies; citizen complaints tracking; incident response, inspection, and enforcement protocols; and fulfillment of public information requests.

DEVELOP AND IMPLEMENT CONSISTENT RECORDKEEPING POLICIES across DEP regional offices. We found variation among DEP regional offices in providing information (e.g., complaints data and planning documents), while our file reviews revealed differences in whether operator and inspection reports were filed by staff. DEP has recognized this regional variability as a problem that needs to be solved, including with regard to how the number and frequency of violations are tracked.¹

MAINTAIN DOCUMENTS ONLINE. DEP has stated that efficiency in permitting and administrative compliance by operators will be achieved in large part through a new electronic system called "eWell," which enables operators to submit paperwork online and track it in a central database.² DEP should fully implement eWell and establish full operator participation as a condition of receiving a permit. DEP should also ensure that all relevant records are entered and maintained in a single, open source, map-based system that allows for bulk-download and querying.

ENSURE FILING OF FORMS AND REPORTS. A centralized database should be developed to track well restoration and drilling and completion reports and alert DEP when they are due and past due; penalties should be issued to operators for failing to file reports on time. Information on chemicals and processes used and offsite and onsite waste management should be included in the database and made available to the public. All operator reports, permits, and waivers should be included in hard copy files and listed in DEP's Environment Facility Application Compliance Tracking System (eFACTS).

REDUCE RESTRICTIONS ON RIGHT-TO-KNOW-LAW REQUESTS. Our research, investigations by partner organizations, and reports from residents indicate that DEP continuously uses exceptions in Pennsylvania's Right-to-Know Law to restrict public access to agency documents. DEP should develop a system to redact personal/private information from agency documents so they can be provided to the public and increase resources available for fulfillment of RTKL requests. Documents related to non-criminal investigations, in which no parties would be directly harmed by release of the information, should not be withheld indefinitely.



TOP: 2013 rally outside DEP headquarters demanding information about the state's water testing policies. Photo by Nadia Steinzor/Earthworks

BOTTOM: Air testing with a Summa canister. Photo by Nadia Steinzor/Earthworks

ALLOW ACCESS TO COMPLAINTS. As noted above, DEP should develop a system to redact personal/private information so that complaints records can be provided to the public. This is particularly important with regard to information on incidents, environmental and health impacts, how and when DEP employees responded to the complaint, any remedial measures taken, and why DEP considers the complaint to be resolved. To be able to connect complaints with particular sites, they should be listed in DEP's Complaints Tracking System not only by geographic location, but by operator and well site or facility.

Recommendations: Water and Air Quality

While gas and oil development involve inherently polluting activities, measures can be taken to reduce harm and ensure that lax pollution controls are a rare exception rather than widespread. This will require changes in several areas, including to:

STRENGTHEN REGULATIONS. Among the most critical measures for Pennsylvania to consider are significant increases in setback distances for wells and facilities from buildings; requirements for operators to install and use advanced technologies to reduce emissions, odors, and noise; the replacement of open pits with closed-loop systems to store waste and drilling fluids; elimination of centralized waste impoundments; prohibition of the onsite burial of solid waste and solidified liquid waste; and requirement of "green completions" to eliminate flaring and venting of methane gas and other pollutants.

ESTABLISH COLLABORATION BETWEEN DEP AND THE PENNSYLVANIA DEPARTMENT OF HEALTH (DOH). The two agencies should develop an agreement to document and respond to spills of chemicals and waste, migration of methane and fracturing fluids, leaks, and other problems that could give rise to health problems. The budgets of both agencies should be increased to ensure they have the resources necessary to track reports of health problems near gas facilities and to respond to citizen complaints (e.g., through a shared database and online and telephone citizen response systems). DOH should train health and medical professionals on exposure pathways and symptoms related to gas operations, so that residents can receive informed advice and appropriate testing and care referrals.³

EXPAND AND STRENGTHEN AIR AND WATER QUALITY TESTING AND REPORTING. DEP should require operators to perform and submit assessments of cumulative emissions from multiple wells and facilities in an area. DEP's emissions inventories should include reporting by operators of conventional wells and all waste impoundments, waste treatment/processing facilities, and gas processing plants. The loopholes for VOCs and HAPs during drilling and completion should be eliminated from the inventories.

DEP should develop a comprehensive and required set of pre-drilling water testing parameters that match what the agency tests for in response to water complaints. DEP should integrate emerging science into its water quality investigations (e.g., the role of gas operations in mobilizing iron, manganese, and other contaminants and shifting water tables and sub-surface topography) and consider changes in secondary water standards when making determinations. DEP should clearly explain to homeowners why a negative or undecided water contamination determination has been made, and follow up at regular intervals to see if conditions have changed.



Infrared image of emissions from the Cumberland/Henderson Compressor station, Greene County.
Video by Frank Finan

DEP should follow a recent recommendation by the Pennsylvania Auditor General to routinely and consistently issue orders to operators to restore or replace private water supplies whenever it is determined that they have been impacted by oil and gas activities, as required by state law.⁴

Recommendations: Permits and Waivers

As discussed above, the well permitting process in Pennsylvania (as well as other oil and gas states) is piecemeal and limited. Action is needed to:

RESCIND THE PERMIT DECISION GUARANTEE. This policy places undue pressure on DEP staff to review applications and issue permits quickly, risking inadequate review and potentially facilitating the issuance of regulatory waivers after construction and operations are underway. Established through an Executive Order, the Governor should rescind that order and give DEP the time needed to do its job.

PLAN AND PACE PERMITS. DEP should stop reviewing and approving permits on a one-by-one basis, but rather should consider the number of wells and facilities already in one area when making permitting decisions. In collaboration with other state and county agencies, DEP should develop a long-term, comprehensive plan for the scope and pace of permits issued. As part of this process, information on air and water quality conditions and potential pollution sources should be considered and, in turn, be factored into decisions on the number and location of wells and facilities allowed—particularly in relation to places where water, air, and health would be most at risk (such as near homes, schools, parks and public lands, agricultural areas, and watersheds).

REVIEW THE MULTIPLE, SEQUENTIAL STAGES OF DEVELOPMENT. Currently, a well permit covers activities that DEP and operators consider to be part of the well site. As a result, some equipment and facilities that can impact health and the environment (e.g., site access roads and waste and chemical storage) are not reviewed. DEP should require operators to submit applications for site projects as a whole, including documentation on all stages and parts of a well site, and review them with regard to their potential impact.⁵ When operators change their plans and expand sites or facilities (e.g., with new waste management activities or the addition of compressors), DEP should review whether different standards and permitting are required to prevent cumulative impacts (e.g., erosion and sedimentation, emissions, and noise).

STRENGTHEN REGULATORY WAIVER REQUIREMENTS. DEP should not issue waste management waivers unless the applicant can clearly document how the method proposed provides “equivalent or superior” protections, as required by state law. DEP should not allow practices for which the agency does not have established guidelines, chemical composition standards, and monitoring/inspection resources.

END EXPEDITED E&S PERMITS. Erosion and sedimentation control permit applications include maps, equipment specifications, engineering plans, geological assessments, and other technical information. Consideration of environmental factors (e.g., site location, soil stability, and proximity to water resources) is likely more limited under this expedited process, which should not be allowed.

PROTECT SPECIAL PROTECTION WATERSHEDS. DEP should track and map all permitted wells and facilities in special protection watersheds, and deny new permits if additional development risks degradation of water quality in these areas and particular water bodies. DEP should develop benchmarks for permit reviews to ensure analysis of whether a proposed project would degrade water quality in special protection watersheds, as required by Pennsylvania law.⁶ DEP should reject any permit applications that do not include detailed protocols for enhanced water protections.

Recommendations: Oversight and Enforcement

Inadequate oversight of gas operations means that risks and damage to air and water quality frequently go undocumented and steps aren’t taken to ensure accountability, deter offenders, and prevent problems from occurring. To turn this situation around, DEP should take actions to:

CLOSE THE ENFORCEMENT GAP. Key steps include binding, effective inspection protocols and schedules and well-to-inspector ratios; significantly higher fines and penalties for violations; and more timely, thorough responses to citizen reports of problems. Operators should only be allowed to “correct on site” violations that are administrative and have no direct impact on the environment and health.

STOP BAD ACTORS. DEP should be given the authority to use denial of future permits as an enforcement tool. Permit decisions should be based in part on compliance history, including resolved violations, other types of incidents in other locations, and operator capacity to adhere to regulations. These aspects should be integrated into permit guidelines in the Pennsylvania Code. DEP should shut down operations when spills, blowouts, and other incidents occur that cause environmental damage, and peg violation levels to the costs of DEP investigation/administration, water and air sampling, resident evacuation and relocation, and other aspects. The state legislature should enact measures to allow DEP to increase fines and enforcement actions, especially against repeat offenders and those with the most fines in order to encourage better practices and improve overall compliance.

ENSURE CONSISTENT INSPECTIONS AND VIOLATIONS. DEP should advocate for more resources for oversight and enforcement, rather than justifying a decrease in inspections and enforcement actions at conventional wells in favor of unconventional wells. Differences exist across regional DEP offices in how inspections are conducted, reported, and classified, as well as the level and frequency of violations issued for particular problems and regulatory lapses. DEP should ensure that all inspectors and office staff follow the same protocols for inspections, documentation, and follow up.



Well site waste pit. Photo by Frank Finan

INSPECT MORE. DEP should update its 1989 inspection policy and make it (or parts thereof) requirements rather than recommendations. DEP should develop a resource requirement/work flow analysis to ensure that inspections are comprehensive, frequent, timely, and cover all stages of extraction and production—and then work with advocacy groups and legislators to secure sufficient funds for implementation of the new policy.

VALUE COMPLAINTS. DEP should give more weight to complaints filed by citizens when conducting inspections, determining violations and penalties, and making permitting decisions. The activities of operators with patterns of “being a bad neighbor” should be restricted. Complaint response protocols should be determined in part on the basis of whether problems will dissipate over time (e.g., odors and water pollution events); complaints should not be disregarded or left undocumented because an inspector doesn’t see, smell, or hear the reported problem.

Finally, an overarching recommendation

To improve oversight and enforcement, Pennsylvania and all oil and gas states should:

REVERSE SPECIAL EXEMPTIONS IN KEY PROVISIONS OF SEVEN U.S. ENVIRONMENTAL LAWS. It is clear from the information in this and other reports that states lack the ability to oversee the oil and gas industry on their own. These loopholes weaken the ability of federal agencies to protect the environment and public health, while allowing oil and gas operators to avoid rules that every other industry must follow. In turn, this distorts perspectives on the relative costs and benefits of gas development and slows action to prevent impacts. Closing the loopholes would increase the availability and transparency of information on contaminants and exposures and make it possible to resolve remaining questions about impacts on the environment and public health.

➤ For the full report and comprehensive case studies go to <http://blackout.earthworksaction.org>

ENDNOTES

- 1 PADEP, “Internal Review of Inspection and Enforcement of Natural Gas Operations.” November 14, 2011.
- 2 PADEP. Permit Review Process and Permit Decision Guarantee Quarterly Report. November 1, 2013.
- 3 The Southwest Pennsylvania Environmental Health Project has prepared useful materials and presentations in this regard. See “Health concerns in the era of gas drilling—a basic toolkit for health care providers.” www.environmentalhealthproject.org/resources/medical-resources.
- 4 Recommendation for Finding #1. Eugene D. Pasquale, Auditor General of the Commonwealth of Pennsylvania. *DEP’s Performance in monitoring potential impacts to water quality from shale gas development, 2009-2012*. July 2014.
- 5 The Maryland Departments of the Environment and Natural Resources recently recommended requiring well permit applicants to submit a Comprehensive Gas Development Plan that would “address, at a minimum, all land on or under which the applicant expects to conduct exploration or production activities over a period of at least the next five years.” See *State of Maryland Marcellus Shale Safe Drilling Initiative Study, Part II: Interim Best Practices*. July 2014. www.mde.state.md.us/programs/Land/mining/marcellus/Documents/7.10_Version_Final_BP_Report.pdf.
- 6 In a case brought by Damascus Citizens for Sustainability, Delaware Riverkeeper Network, and others against DEP and Newfield Appalachia PA, court depositions and proceedings verified that DEP generally does not consider the impact of gas and oil activities on special protection watersheds unless projects are five acres in size or larger. As a result of the 2012 settlement of the case, DEP is now required to ensure that applicants will comply with anti-degradation regulations before starting earth disturbance activities in special protection watersheds, regardless of the size of the project. See Susan Phillips, “Shale gas wells with smaller footprint to get greater scrutiny.” State Impact, February 13, 2012.
- 7 Pennsylvania Code, Subchapter B, General Requirements, at www.legis.state.pa.us/WU01/LI/LI/CT/HTM/58/00.032.011.000..HTM.
- 8 See *Loopholes for Polluters* fact sheet. Earthworks 2011. www.earthworksaction.org/library/detail/loopholes_for_polluters.
- 9 See *Breaking all the Rules: The Crisis in Oil and Gas Regulatory Enforcement* and related state-specific reports. Earthworks, 2012. <http://enforcement.earthworksaction.org>.



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For the full report go to: <http://blackout.earthworksaction.org>

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